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NATURAL BACTERIAL AGGLUTININS IN THE CHILD'S SERUM.

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THE serum of unvaccinated normal persons may contain natural agglutinins, some of which agglutinate bacteria, others of which agglutinate certain types of human red blood cells. The latter class of natural agglutinins is perhaps the best known, because by their use it is possible to classify a subject's red cells into one of the four major blood groups. The natural bacterial agglutinins are not so well known, the term "natural bacterial agglutinin" being used here to describe the bacterial agglutinins which are sometimes present in the serum of a normal person who has not been infected by, or vaccinated with, the particular organism. It is partly the concentration of these natural bacterial agglutinins which determines the significance of the titre revealed by an agglutination test when used as a diagnostic aid.

The chances of acquiring agglutinins through the experience of infection increase with a persons' age, so that, in the case of adults, differentiation is difficult between those agglutinins which are acquired because of a previous infection and the agglutinins which, like the red cell agglutinins, develop in the normal course of events. On the other hand, the infant is born possessing in his serum only those substances which he forms as a result of his inheritance. As any additional factors must be acquired either through the natural processes of growth or through infection, the infant is a useful subject for investigation. Low resistance to infection is the rule in young children, and it is unlikely that an infection giving rise to agglutinins would pass unnoticed. Thus the part played by infection in the formation of the agglutinins can possibly be gauged.

As has previously been mentioned, the presence of natural agglutinins can cause complications in the use of the agglutination test for diagnostic purposes. This investigation was commenced for the purpose of estimating the extent of this complication when the agglutination test is used as a diagnostic aid in cases of dysentery and of Salmonella gastro-enteritis. For this reason the natural agglutinins of the dysentery and Salmonella organisms were the only ones investigated.

As the work proceeded it became obvious that the types of natural agglutinins in a child's serum were confined to those of a limited number of the organisms that were used, and that these agglutinins were absent from the serum of very young infants. It was then decided to enlarge the scope of the work and investigate the incidence of the agglutinins at various age levels and to study their properties.

Adelaide is favourably situated for such an investigation, because the Salmonella and dysentery organisms are each responsible for approximately the same number of cases admitted to this hospital. The number of such cases is about 30 of each type each year. The part played by subclinical infection in the production of natural agglutinins can thus be gauged, because if infection is responsible, then agglutinins of both types of organism should be detected. However, if only one type of agglutinins—that is, those either of the Salmonella or of the dysentery organisms—is detected, the origin of the natural agglutinins must be sought elsewhere.

As has been shown in another article,[1] the most prevalent type of dysentery in South Australia is that caused by the Flexner type II organism, so that the natural agglutinins which are produced as a result of subclinical dysentery infection should be the Flexner type II agglutinins, and these should be the most easily detected.

The objects of this article are to report the incidence of the Salmonella and dysentery organism agglutinins which were found in the serum of patients not suffering from enteritis, to report their specificity for the organisms they agglutinate, and to compare their heat stability with that of the agglutinins acquired as a result of known infection. In addition, a study is made of the heat stability of the immune agglutinins at various stages of the child's illness.

EXPERIMENTAL METHODS.

Organisms Used in the Agglutination Tests.

Flagellar suspensions of the following organisms in the specific phase were prepared: *Bacterium paratyphosum* A, B and C, *Bacterium typhosum*, *Bacterium typhi-murium*, *Bacterium reading*, *Bacterium bovis-morbificans* and *Bacterium enteritidis*. The specific phase flagellar antigens represented are *a*, *b*, *c*, *d*, *i*, *eh*, *r* and *g.o.m.* The organisms which have been isolated from cases of gastro-enteritis in South Australia, and whose specific flagellar agglutinins are detectable by the above suspensions, are: *Bacterium typhi-murium* (specific-phase flagellar antigen *i*), Bacterium *reading* (*eh*), *Bacterium bovis-morbificans* (*r*), *Bacterium stanley* (*a*), *Bacterium newport* (*eh*), *Bacterium derby* (*fg*), and *Bacterium adelaide* (*fg*). (Atkinson *et alii*.[(a)(a)]). Other organisms possessing the same specific-phase flagellar antigens are also represented.

To detect group agglutinins in the serum, a suspension of *Bacterium typhi-murium* in the group phase was used.

The flagellar suspensions were prepared by adding formalin (0·3% strength) to eighteen-hour broth cultures of freely motile organisms in the required phase, which were then stored in the refrigerator.

The somatic suspensions used were those of *Bacterium paratyphosum* A, B and C, *Bacterium typhosum*, *Bacterium flexneri* types I to VI (Boyd's classification[(i)]), *Bacterium flexneri* type Y, *Bacterium sonnei*, *Bacterium ambiguum* (Schmitz type), *Bacterium shigæ* and *Bacterium adelaide*. The "O" antigen of the *Bacterium adelaide*, which was isolated in this city by Miss N. Atkinson,[(a)] is XXXV.

The somatic suspensions were prepared by cultivating the organisms on agar plates, incubating them for eighteen hours and suspending the resulting growth in normal saline solution. The saline suspensions were tested for "smoothness" with a 1:500 solution of acriflavine. The saline suspensions were centrifuged and the supernatant saline solution was discarded. To the deposit was added sufficient alcohol (70% strength) to bring the concentration of the organisms to 40,000,000,000 organisms per millilitre. The alcoholic suspensions were incubated overnight at 37° C., after which they were again centrifuged and the supernatant alcohol was discarded. An equal quantity of 33% alcohol was added to replace the discarded supernatant fluid and the suspensions were stored in the refrigerator.

For use the flagellar suspensions were diluted with saline solution to a concentration of 500,000,000 organisms per millilitre, and the somatic suspensions were diluted to a concentration of 1,000,000,000 organisms per millilitre.

The Serum.

Blood was collected from convalescent hospital patients, aged between three days and twelve years. None of the children had a history of intestinal infection, and none had been vaccinated with "T.A.B." vaccine. They were a random selection, and included those with both medical and surgical conditions. Forty-four of the children were aged under one year, and ninety-four were aged between one and twelve years. Those aged between one and twelve years were divided into age groups of one year, and at least six of each age group were examined. Where it is necessary to distinguish these patients from patients with enteritis, they will be referred to as "non-enteritis patients".

Each specimen of serum was diluted with an equal quantity of glycerine and stored in the refrigerator.

The Agglutination Tests.

The agglutination tests were made simultaneously on the serum of the non-enteritis patients and enteritis patients in batches of ten, five of each class being examined at the same time. Each specimen of serum was diluted twenty times with saline solution, and 0·2 millilitre of suspension was added to an equal quantity of diluted serum in a test tube measuring three inches by three-eighths of an inch. The tubes were placed in water baths at 52° C. for two hours. The results of the tests on the flagellar suspensions were read and recorded, but the test tubes containing the somatic suspensions were left at room temperature until the following morning, and then the results were read and recorded. The titres of the specimens of serum giving agglutination at this dilution were then determined. If sufficient serum was available, the presence of certain agglutinins, not detected at the above dilution, was determined in the serum when diluted serially from 1 in 4 to 1 in 32.

The results of all agglutination tests were read with the aid of a hand lens.

RESULTS OF EXPERIMENTAL WORK: THE NATURAL AGGLUTININS PRESENT IN THE SERUM OF NON-ENTERITIS PATIENTS.

The Natural Agglutinins of the Flexner Organisms.

The serum when diluted 20 times gave agglutination with only four of the 23 suspensions. These were the Flexner types I, IV, VI and Y suspensions.

The Natural Flexner Types I, IV, VI and Y Agglutinins.

As has previously been stated, the Flexner types I, IV, VI and Y agglutinins were the only natural agglutinins detected in serum diluted 20 times. The results of the tests are given in the first two columns of Table I. They show that one or more of these agglutinins appears frequently after the child has reached the age of twelve months. Not all four types were present in all the specimens of serum, and of the 138 specimens tested (from

TABLE I.

Natural Agglutinins of Flexner Types I, IV, VI and Y.

Age of Patient.	Dilutions of Serum.				Summary.	
	1:20		1:4			
	Number of Specimens Tested.	Number Containing Agglutinins.	Number of Specimens Tested.	Number Containing Agglutinins.	Number of Specimens Tested.	Number Containing Agglutinins.
Under three months	6	0	6	0	6	0
Over three months, under six months	15	3	10	1	13	4
Over six months, under nine months	15	3	9	5	12	8
Over nine months, under twelve months	8	5	2	1	7	6
Total under twelve months	44	11	27	7	38	18
Twelve months to twelve years	94	73	19	19	92	92
Total (all ages)	138	84	46	26	130	110

children of all ages), 56 contained the type I agglutinin, 65 the type IV agglutinin, 50 the type VI agglutinin and 71 the type Y agglutinin; 84 specimens contained one or more of these Flexner agglutinins. None of the specimens had titres of over 1 in 160 for any of the organisms. Tests were next performed on the serum of 46 of the above patients, in which no agglutinins had been detected. The serum was diluted only four times and the tests were confined to the four Flexner suspensions, types I, IV, VI and Y. The results of these tests are given in the third and fourth columns of Table I. The figures show that after the age of twelve months all the non-enteritis patients had one or more of these agglutinins in their serum.

The last two columns of Table I summarize these results and show the number of children with natural agglutinins of the Flexner strains mentioned when these specimens were tested at dilutions of 1 in 4 or higher.

These figures indicate that the natural agglutinins of Flexner types I, IV, VI and Y organisms are not present in detectable amounts in the serum of children under the age of three months, but that from that age onwards the number of children possessing these agglutinins increases with the age of the child, until at the age of twelve months or more all children's serum contains one or more of these agglutinins in sufficient quantities to be detectable.

The Natural Flexner Type II Agglutinins.

As has already been intimated, the Flexner type II agglutinin was not detected in the specimens of serum which were diluted 20 times. Sera from 42 of the children, whose ages ranged from one year to twelve years, were tested when diluted serially, the first dilution being 1 in 4. No agglutinins of Flexner type II organisms were detected even at the lowest dilution.

The Natural Flexner Types III and V Agglutinins.

Flexner types III and V agglutinins were not detected in serum diluted 20 times. A number of specimens of serum were examined at the lower dilutions, and the presence of the agglutinins shows an interesting age incidence. The results are given in Table II.

TABLE II.

Natural Agglutinins of Flexner Types III and V Organisms.

Age of Subject.	Number of Specimens of Serum Tested.	Number Containing Flexner Type III Agglutinins.	Number Containing Flexner Type V Agglutinins.
Under six years	18	0	0
Over six years, under nine years	17	0	3
Over nine years, under twelve years	20	5	10

Although the number of specimens of serum tested is small, the figures show a tendency for these agglutinins to be absent from the serum of the younger children.

The Natural Agglutinins of the Salmonella Organisms.

No agglutinins for either the somatic or flagellar antigens of the Salmonella organisms were detected in any of the specimens of non-enteritis serum which were diluted 20 times. A small number of the specimens were tested at serial dilutions (of the serum), the first dilution being 1 in 4, for the agglutinins of the organisms listed below. The results are given in Table III.

The only agglutinins detected were those of *Bacterium typhosum* O. The highest titre of the agglutinins for this organism was 1 in 32, which was reached on only two occasions. The ages of the children whose serum was used for the test with *Bacterium typhosum* O varied between seven months and eleven years, and, as is shown in Table IV, the age incidence is interesting.

Here again the tendency seems to be for the agglutinins to be present in the serum of the older children more frequently than in that of the younger.

TABLE III.

Natural Agglutinins of Salmonella Organisms.

Organism.	Type of Suspension.			
	Somatic.		Flagellar.	
	Number of Specimens of Serum Tested.	Number Containing Agglutinins.	Number of Specimens of Serum Tested.	Number Containing Agglutinins.
Bacterium paratyphosum A ..	20	Nil	Specific "H" 2	Nil
Bacterium paratyphosum B ..	18	Nil	Specific "H" 6	Nil
Bacterium paratyphosum C	21	Nil	Specific "H" 4	Nil
Bacterium typhosum ..	41	26	Specific "H" 4	Nil
Bacterium typhimurium			Specific "H" 11	Nil
Bacterium reading ..			Specific "H" 2	Nil
Bacterium bovis-morbificans			Specific "H" 3	Nil
Bacterium enteritidis			Specific "H" 7	Nil
Bacterium typhimurium			Group "H" 11	Nil

TABLE IV.

The Age Incidence of the Natural Agglutinins of Bacterium typhosum *O.*

Age of Children.	Number of Specimens of Serum Tested.	Number Containing Agglutinins.
Under one year	8	3
Over one year, under four years ..	12	6
Over four years, under eight years ..	14	11
Over eight years, under twelve years ..	7..	6

Natural Agglutinins of Other Organisms.

Agglutinins of *Bacterium sonnei*, *Bacterium ambiguum*, *Bacterium shigæ* and *Bacterium adelaide* were not detected in the specimens of serum diluted 20 times. Insufficient quantities of serum were available to test for agglutinins at lower dilutions.

Constancy of the Natural Flexner Agglutinins in the Serum.

In the discussion on the agglutinins of Flexner types I, IV, VI and Y organisms, it was stated that the serum from the non-enteritis patients could contain one or more of these agglutinins. To determine the constancy of the agglutinins, four of the subjects were selected whose serum contained all four natural agglutinins, and the titres of the agglutinins were observed at intervals of approximately one week for a period of about three weeks. The results are given in Table V.

TABLE V.

The Constancy of the Flexner Agglutinins in Eleven Specimens of Serum.

Subject.	Date of Collection of Serum.	Titres of Agglutinins.			
		Flexner I.	Flexner IV.	Flexner VI.	Flexner Y.
B.S.	3.11.43		80		80
	11.11.43	40	160	40	160
	23.11.43	40	40	40	40
C.M.	26.11.43	40	40		40
	10.12.43	160	40	160	160
P.W.	29.2.44	160	160	80	80
	4.3.44	160	160		160
	15.3.44	40	80	80	160
L.E.	23.10.43		80	80	
	6.11.43	40	160	80	160
	18.11.43	40	160		160
Number of specimens containing agglutinins ..		9	11	7	10

The lowest titre (1 in 40) represents a 1 in 20 dilution of the serum before the suspension is added, and in these tests this was the lowest dilution used. Had the serum been diluted four times in the cases in which no agglutinins were detected, it is possible that some of the agglutinins would have been detected. However, these results show that there is a fair degree of constancy in the appearance of the agglutinins in the serum when once they have been formed.

The serum of another child was examined over a period of nine weeks. This child was suffering from osteomyelitis, and during the period that the serum was being collected he was receiving vaccine (*Staphylococcus aureus*) therapy. Eight specimens of blood were collected at intervals of approximately one week. Table VI shows the titres of the various agglutinins obtained during the nine weeks and the number of specimens of serum with the indicated titres.

TABLE VI.
Consistency of the Titres of the Natural Flexner Agglutinins.

Titres.	Flexner I Agglutinins.	Flexner IV Agglutinins.	Flexner VI Agglutinins.	Flexner Y Agglutinins.
<1 in 20	—	—	4	—
1 in 20	1	1	3	—
1 in 40	4	7	1	4
1 in 80	3	—	—	4
1 in 160	—	—	—	—

The titre 1 in 20 was the lowest titre detectable in this experiment. As the figures indicate, the agglutinins were fairly constant in appearance and concentration throughout the nine weeks.

Specificity of the Natural Agglutinins of the Flexner Organisms.

The antigenic interrelationship of the Flexner strains makes it possible that the agglutination of the four Flexner strains, types I, IV, VI and Y, by the natural agglutinins present in the serum is due to a common group antigen. Absorption tests were made to determine the agglutinins remaining when the serum was absorbed by one of the seven Flexner strains, types I to VI and Y. Table VII gives the number of specimens of serum absorbed by each strain and the number of specimens from which the particular agglutinin was absorbed. These results are summarized in the final column.

The results indicate that Flexner types I and Y organisms both possess two immunologically equivalent antigens. These are probably present on the organisms in different quantities, because serum agglutinating the Flexner type I organism does not always agglutinate the Flexner type Y organism, the reverse being true also. None of the antigens of Flexner type II organisms was suitable for absorbing the natural agglutinins. Flexner type III organisms possess antigens capable of removing the agglutinin of Flexner type VI, although none of the specimens of serum agglutinated the Flexner type III organism. This was probably due to the fact that an inadequate quantity of the antigen was available on the Flexner type III organism. The Flexner type IV organisms possess antigens which remove the four major natural agglutinins, although the absorption of the Flexner type Y agglutinin was not always complete. This indicates that the natural agglutinins of Flexner types I and Y organisms are separate entities, as was suggested earlier. The Flexner type V organism removed the agglutinins of the Flexner type IV organism in some cases, but the results were not conclusive. The Flexner type VI organism will remove natural agglutinins of that organism only.

The Effects of Salmonella Infections on the Concentration of the Natural Flexner Agglutinins.

To determine the effect of non-specific stimuli on the production of natural Flexner agglutinins, the serum of children infected by one of the Salmonella organisms and containing the Salmonella agglutinins was tested for the natural Flexner agglutinins. Table VIII shows the results of some of the tests on the serum of children under one year old. The infecting organism was *Bacterium typhi-murium* in all cases.

TABLE VIII.
Agglutinins in the Serum of Babies Suffering from Salmonella Infections.

Subject.	Age. (Months.)	Type of Immune Agglutinin.	Titre.	Natural Agglutinins.
Q2	2	Group-phase "H".	40	Nil
A3	4	Specific-phase "H". Group-phase "H".	320 40	Nil Nil
R9	5	Specific-phase "H".	160	Nil
P.E.	5	Specific-phase "H". Group-phase "H".	32 640	Nil Nil
N.T.	11	Specific-phase "H". Group-phase "H".	32 320	Nil Nil

In addition to demonstrating that infection by *Bacterium typhi-murium* had no effect on the production of natural Flexner agglutinins, the figures show that even at the age of two months the antibody-producing apparatus is capable of forming antibodies, provided that it receives the required stimulation.

Thirty-three specimens of serum from 16 children aged over twelve months were examined. The children were suffering from gastro-enteritis, and Salmonella organisms had been isolated from their fæces. In none of these specimens were natural Flexner agglutinins present in a titre above 1 in 160. This titre was the highest recorded for the natural Flexner agglutinins in the serum of non-enteritis patients. These results show that infection by Salmonella organisms does not increase the concentration of the natural Flexner agglutinins.

TABLE VII.
The Absorption of the Natural Agglutinins.

Organisms Used for Absorption.	Agglutinins.								Types of Flexner Agglutinins Absorbed
	Flexner I.		Flexner IV.		Flexner VI.		Flexner Y.		
	Number of Specimens Tested.	Number from which the Agglutinin was Absorbed.	Number of Specimens Tested.	Number from which the Agglutinin was Absorbed.	Number of Specimens Tested.	Number from which the Agglutinin was Absorbed.	Number of Specimens Tested.	Number from which the Agglutinin was Absorbed.	
Flexner Type I ..	7	7	7	1	2	—	7	7	I, Y.
Flexner Type II ..	5	—	5	—	3	—	5	—	—
Flexner Type III ..	5	—	5	—	4	4	5	—	VI.
Flexner Type IV ..	6	6	6	6	3	3	6	4	I, IV, VI, ? Y.
Flexner Type V ..	5	—	5	2	4	—	5	—	IV (possibly).
Flexner Type VI ..	6	—	6	—	4	4	6	—	VI.
Flexner Type Y ..	7	7	7	—	2	—	7	7	I, Y.

The Effect of Dysentery Infections on the Concentration of the "Accessory" Flexner Agglutinins in the Serum.

The concentration of the agglutinins of Flexner types I, IV, VI and Y organisms was determined in the serum of the 24 children with Flexner type II infections. The titre for the Flexner type I organism was 1 in 320 or more in six cases and for the Flexner type Y organism in nine cases. None of the specimens of serum contained agglutinins of the Flexner types IV and VI organisms in concentrations above those of the non-enteritis serum; that is, the titre was not above 1 in 160 for these organisms. The increase in the concentration of the Flexner types I and Y agglutinins was probably due to the production of group agglutinins as a result of infection by the Flexner type II strain.

EXPERIMENTS ON AGGLUTININS.

Heat Stability of the Agglutinins.

The heat stability of the agglutinins was tested by diluting the serum ten times with saline solution and heating separate portions of the diluted serum for thirty minutes at 60° C., 65° C. and 70° C. After being heated the serum was cooled and the agglutinating power was compared with that of a portion of the diluted serum which had been kept at room temperature.

The agglutinins present in the serum from three patients with Flexner type II dysentery and those present in the serum from three patients with Salmonella gastro-enteritis were tested for heat stability.

In the dysentery cases the agglutinins present are the specific Flexner type II agglutinins and the "accessory" agglutinins. The latter consist partly of group agglutinins, which are present as a result of the infection, and partly of the natural Flexner agglutinins. The results are given in Table IX.

The results show that all types of agglutinins were destroyed by heating at 70° C. for thirty minutes. The concentration of all agglutinins was lowered by heating at 65° C. for thirty minutes. In two cases the concentration of the specific Flexner type II agglutinins was lowered by heating at 60° C., but the concentration of the "accessory" agglutinins was lowered for only one strain in the nine tests that were made at this temperature. Although the numbers are small, the indications are that the "accessory" Flexner agglutinins are not less heat-stable than the specific Flexner type II agglutinins.

In the three Salmonella gastro-enteritis cases the agglutinins whose heat stability was tested were the flagellar and somatic agglutinins of the infecting Salmonella strain and the natural Flexner agglutinins. The serum of one patient contained the specific flagellar agglutinin. The serum of all three patients contained the group-phase flagellar and the somatic agglutinins. The results are given in Table X.

These figures show that in one examination out of four the concentration of the flagellar agglutinins was reduced by heating at 60° C. and that at this temperature the concentration of the Salmonella somatic agglutinin was reduced in one of three cases. In one of the four tests with the natural Flexner agglutinins the concentration of the agglutinins was reduced at 60° C. The concentration of all the agglutinins was reduced at 65° C., and at 70° C. all the agglutinins except one had been destroyed. These results also indicate that the various types of agglutinins are approximately equal in heat stability.

The Heat Stability of the Flagellar Agglutinins at Different Periods in the Infection.

In the previous experiment the heat stability of the flagellar agglutinins in the case of Wo compared with that

TABLE IX.

Heat Stability of Specific and "Accessory" Flexner Agglutinins.

Temperature.	Subject J. Titres of Agglutinins.				Subject W. Titres of Agglutinins.				Subject F. Titres of Agglutinins.			
	Flexner Type I.	Flexner Type II.	Flexner Type III.	Flexner Type Y.	Flexner Type I.	Flexner Type II.	Flexner Type VI.	Flexner Type Y.	Flexner Type I.	Flexner Type II.	Flexner Type VI.	Flexner Type Y.
Room	320	160	80	320	320	40	320	640	320	80	160	640
60° C.	320	40	80	320	320	0	320	640	320	80	160	320
65° C.	160	0	40	80	160	0	80	160	160	40	80	80
70° C.	0	0	0	0	0	0	0	0	0	0	0	0

TABLE X.

The Heat Stability of the Salmonella and Natural Flexner Agglutinins.

Temperature.	Subject H. Titres of Agglutinins.				Subject S. Titres of Agglutinins.			Subject Wo. Titres of Agglutinins.			
	"H"-S.[1]	"H"-G.	B-"O".	F.IV.	"H"-G.	B-"O".	F.Y.	"H"-G.	B-"O".	F.I.	F.Y.
Room	40	320	80	80	640	160	80	5,120	160	160	160
60° C.	40	320	80	40	320	160	80	5,120	80	80	160
65° C.	0	80	0	0	80	0	40	1,280	40	80	80
70° C.	0	0	0	0	0	0	0	160	0	0	0

[1] For "H"-S, "H"-G, B-"O", F.I, F.IV, F.Y, read specific-phase flagellar, group-phase flagellar, Salmonella, somatic and natural Flexner types I, IV and Y agglutinins respectively.

TABLE XI.

The Heat Stability of Salmonella Flagellar Agglutinins at Different Periods of the Infection.

Temperature.	Subject C.D., Group-H Titre; Days after Infection.			Subject B., Specific-H Titre; Days after Infection.			
	14	28	36	13	32	61	66
Room	10,240	2,560	640	320	160	160	160
60° C.	2,560	1,280	320				
65° C.	80	160	160	40	80	80	80
70° C.	0	40	40	0	0	40	80

of the flagellar agglutinins in the other two cases suggested that agglutinins produced at different periods of the infection differed in their heat stability. To test this difference the serum of two patients suffering from Salmonella gastro-enteritis was available and the heat stability of the flagellar agglutinins was determined. The results are given in Table XI.

The figures suggest that although the concentration of the agglutinins decreased in the later stages of the infection, the agglutinins that were formed then had a greater heat stability than those formed earlier in the disease. The indications are also that the agglutinins present in the serum in the later stage of the disease were not those that were produced earlier and as such had persisted in the serum, because, had they been remnants, the heat stability of the agglutinins would have been the same in each case. As the heat stability increased in the later stages of the disease, the results suggest that the agglutinins were formed continuously.

DISCUSSION.

Antibodies are protein substances which are formed by the antibody-producing mechanism of the reticulo-endothelial system in response to the stimulation of this mechanism by other substances, usually protein in nature, called antigens. When formed, the antibodies are discharged into the blood stream or body and fluids, where under suitable conditions their presence can be detected by their reaction with the corresponding antigens. Antibodies can be classified as agglutinins, precipitins, antitoxins and so forth, according to the type of reaction they give, under suitable conditions, with their antigens. Thus an agglutinin will cause the agglutination of particular substances containing the antigen, a precipitin will precipitate the antigen from its solution, and an antitoxin will neutralize its toxin. In all cases there is a combination between the antigen and antibody, and within certain limits this combination is confined to an antibody and the homologous antigen.

One antigen differs from another by virtue of the different determinant groups on the surface of the molecules, and it is this difference in determinant groups of the antigen which causes the production of different antibodies. Most authorities agree that antibodies are globulins and that in the formation of the antibody the surface of the globulin molecule is modified so that part of the surface will combine with the determinant group of the antigen. How the modification of the globulin molecule is effected is not known; but for the purposes of this discussion the hypothesis of Haurowitz-Mudd will be used. This hypothesis states that antibodies are new globulin molecules which are synthesized in the presence of, and in direct spatial contact with, the antigen. As a result, that part of the surface of the newly formed globulin molecule which is in contact with the antigen is moulded to the pattern of the determinant group of the antigen. Hooker and Boyd[8] suggest that the "anti-determinant"—that is, the reactive part of the antibody molecule—may even be an invaginated area of the antibody molecule. In other words, the determinant group of the antigen molecule protrudes from the surface, and acting as a template, embosses superficial depressions on the surface of the new globulin molecule as it is formed. The experiments of Pauling and Campbell[7] support the hypothesis that the reactive part of the antibody molecule is moulded by the determinant group of the antigen. By partial denaturation of bovine globulin with alkali and by slow withdrawal of the denaturing agent in the presence of methyl blue, these workers were able to produce a protein solution *in vitro* whose properties were those of the specific antiserum of methyl blue. Similar results were obtained by the use of mild heat for denaturation. These experiments suggest that the pattern of part of the surface of the globulin molecule depends upon the pattern of the determinant group of the antigen in whose presence the formation of the globulin molecule is completed.

The properties which are required for a substance to be antigenic—that is, to stimulate the production of antibodies in the animal body—are not definitely known; but one of the most important is that the substance must be capable of being ingested by the cells of the reticulo-endothelial system. Another important property is that the substance, having been ingested by the reticulo-endothelial cells, must be able to stimulate the production of globulins. The nature of this property is unknown, but it may consist of a sufficient concentration in the cell of suitable degradation products, such as amino-acids, to alter the equilibrium so that the reaction of these substances with the cellular enzymes is one of excess globulin synthesis.

The reactions between antigens and antibodies are not confined to the homologous antigens and antibodies. Landsteiner,[9] working with synthetic antigens, has shown that the precipitin reaction between an antigen and an antibody is strongest when the homologous antigen is used, but that precipitin reactions can be obtained with other antigens also, provided that the determinant groups of these antigens are equivalent, in the immunological sense, to the homologous antigen. The strength of the precipitin reaction will depend upon the closeness of this immunological equivalence. In the experiments reported in this article the antigens present on the organisms which detected the natural agglutinins were probably only immunologically equivalent to the specific antigens. Similarly, the antigens of the red blood corpuscles which are responsible for placing a person's red cells into one of the four major blood groups possibly fall into the same category. They may or may not be the antigens which cause the production of the isohæmagglutinins, if it is assumed that antigens are necessary. The detection of the natural agglutinins seems, therefore, to be due to the accidental use of substances containing antigens which are equivalent, immunologically, to the homologous antigens. This is shown by the detection of natural Flexner agglutinins in the serum of children, in none of whose clinical records was there mention of a history of dysentery.

In their discussion on natural antibodies, Topley and Wilson[9] suggest four mechanisms by which the naturally occurring antibodies can arise. These mechanisms will be discussed in terms of the experimental work reported in this article.

The first mechanism is that the production of the antibodies is caused by actual infection with the corresponding bacterium, and these antibodies persist in the serum or are present therein because of subsequent clinical or subclinical infection. Against this mechanism is the fact that, although the Flexner type II organism is responsible for the majority of cases of Flexner dysentery in the children of South Australia, no agglutinins of this Flexner strain were detected in the serum of the non-dysentery patients. The fading of the Flexner type II agglutinins from the serum of the dysentery patients, as shown elsewhere,[1] indicates that the Flexner agglutinins, which are produced as a result of infection by Flexner organisms, disappear from the serum when the antigens responsible for their production have been destroyed. There seems no good reason for believing that the agglutinins produced in response to infection by the other Flexner strains would be more persistent than those of the Flexner type II strain. On the other hand, there is no doubt that certain antibodies, such as diphtheria antitoxin, certain erythrogenic antitoxins, antibodies of the poliomyelitis virus, and typhoid and paratyphoid agglutinins, do persist for lengthy periods after infection. Their persistence can be attributed either to constant antigenic stimulation due to subclinical infection or to the alteration of the structure of certain components of the reticulo-endothelial cells due to the infection. It has been assumed that, on ingestion of the bacteria by the reticulo-endothelial cells, the bacterial enzymes are degraded and their degradation products used for the metabolism of the cell in the same way as other proteins foreign to the cell. However, certain bacterial enzymes may be resistant to proteolysis and be able to use the substrate provided by the reticulo-endothelial cell to synthesize proteins whose structure is similar to that of the original bacterial proteins. If this was so, these proteins could act as templates when new globulins were

formed and thus produce antibodies similar to the bacterial antibodies.

The site and type of cells which produce the antibodies probably have some bearing on the length of time during which the antibodies are produced. It is noticeable that those antibodies which are produced locally, as in cases of dysentery and Salmonella gastro-enteritis, are not so persistent as the antibodies produced by the organisms of typhoid and paratyphoid fever which invade the blood stream. The quantity of antigenic material which reaches the antibody-producing apparatus must have some bearing on the quantity of antibodies produced and the length of time for which these antibodies are detectable in the serum. For these reasons, it seems idle to compare the antigenic response of an animal which has been injected intravenously with massive quantities of organisms with that of a similar animal which has become infected in natural circumstances.

When the chances of reinfection by organisms are relatively great, as by those of diphtheria, scarlet fever and so forth, the persistence of antibodies can be due to frequent subclinical infection by the organisms concerned. When the chances of reinfection are small, as by the organisms of typhoid and paratyphoid fevers in this State, the persistence of antibodies of these organisms following infection must be due to causes other than reinfection. When antibodies of organisms are constantly present in the serum of the majority of normal subjects, infection by these organisms can play little part in the constant appearance of these antibodies, especially if these organisms are comparatively rare in the community.

The second mechanism propounded by Topley and Wilson is that the natural agglutinins arise because of infection by other types of organisms, which share common antigenic components with the organism which is used to detect the agglutinins. In the work reported elsewhere,[1] only low titres for the infecting Flexner type II organism were obtained in many of the specimens of serum from the dysentery patients, although the precipitin reaction has shown that this particular organism possesses an ample quantity of the specific antigen.[10] If an infecting organism other than a Flexner organism possessed Flexner antigens and was responsible for the production of the natural Flexner agglutinins, one would expect the shared Flexner antigen to take a major position in the antigenic structure of the organism. Such an organism has not so far been revealed. The possession of shared antigenic components by Flexner organisms and hitherto unexamined organisms is, nevertheless, quite possible; but here again an objection arises—namely, that, as has already been stated, infection by Salmonella or Flexner organisms in the gastro-enteritis and dysentery cases did not cause the production of persistent antibodies.[1] An infection common to all and repeated at fairly frequent intervals could cause this constancy and persistence of antibodies. Such an infection is the common "cold"; but if this infection is responsible, one would expect greater immunity to it than is experienced. It is thought, however, that the natural Flexner agglutinins, like the isohæmagglutinins and normal serum globulins, are developed in response to non-living stimuli which are common to all and which are constantly available. These stimulating substances can come from sources external to the animal body or can be substances which are part of the cellular structure of the animal—namely, internal stimuli.

External stimuli are envisaged in the third mechanism of Topley and Wilson. This is that the natural antibodies arise in response to non-living antigenic material which gains entrance to the antibody-producing apparatus by way of the intestinal tract or other routes. Recent work indicates that the entrance of complete antigens into the blood stream or tissue fluids may not be necessary for the production of antibodies. Schwentker and Comploier[11] injected mixtures of emulsions containing haptenic substances derived from rabbit's kidney cells and streptococcal or staphylococcal toxin into rabbits. They obtained complement-fixing antibodies which reacted with the emulsions of the homologous kidney. Neither the kidney emulsions nor the toxins produced these antibodies when injected alone. It seems possible that haptenic substances which have gained entrance to the blood stream may combine with serum proteins and form complete antigens. If the determinant group of the hapten was immunologically equivalent to the determinant group of a bacterial antigen, the antibodies which would be produced in these circumstances would react with the bacterium and thus natural antibodies would arise. The constant appearance of the natural Flexner agglutinins makes this method of their production—that is, stimulation by non-living antigens or haptens—more appealing than the first and second mechanisms. The third mechanism could be used to explain the development of the isohæmagglutinins; but these will be discussed in greater detail when the fourth mechanism is being discussed.

The fourth mechanism of Topley and Wilson is that the natural antibodies arise as a by-product in the normal functioning of the antibody-forming apparatus, altogether apart from any specific external stimulus. The cells of the reticulo-endothelial system, besides producing normal globulins and natural and immune antibodies, are responsible for removing from the blood stream and body fluids foreign substances and dead and damaged tissue cells. There is no doubt that the production of immune antibodies requires suitable stimuli; but whether the production of normal serum globulins requires a stimulus or whether their formation proceeds whenever adequate amino-acids are available is debatable. As has previously been stated, these two factors may be one and the same. The deficiency of normal serum globulins and the absence of natural antibodies from the serum of very young animals is well known, and the work of Famulener, quoted by Topley and Wilson,[9] has shown that the increase in the serum globulin content in very young animals is closely correlated with the appearance of natural antibodies. The deficiency of serum globulin and the absence of natural antibodies can be explained in two ways. Either the reticulo-endothelial system does not function efficiently as an antibody-producing apparatus, or the cells of the reticulo-endothelial system do not receive sufficient stimuli in early life to cause the production of these substances in normal amounts. The experiments with the serum of some of the babies suffering from Salmonella gastro-enteritis showed that even at an early age the cells of the child's reticulo-endothelial system were able to produce ample quantities of immune antibody, although detectable amounts of the natural Flexner agglutinins had not been formed. These facts indicate that something more than an efficiently functioning reticulo-endothelial system is required for the production of globulins, whether they are normal serum globulins or specialized globulins.

If it is assumed that stimuli are required and that these do not come from external sources, the most obvious internal stimuli are those provided by antigenic material of dead and damaged tissue cells. Kidd and Friedewald[12] showed that complement-fixing antibodies could be demonstrated in the serum of normal adult rabbits by mixing the serum with extracts of normal rabbit tissues under controlled conditions. These antibodies were present in the serum of all adult rabbits, but were not detectable in the serum of rabbits less than one month old. These experiments show that antigens need not be foreign to the animal producing the corresponding antibodies. If the stimuli for globulin production are the antigenic substances of tissue cells, and if the determinant groups of these antigens are similar or immunologically equivalent to the determinant groups of bacterial antigens, the presence of globulins, which are formed within the templating influence of the tissue cell antigens, will be detectable by serological reactions with the serum and the particular bacterium. In other words, the globulin thus formed will be a natural antibody. If, however, such globulins are formed in a part of the cells which contains no templating antigenic material, these globulins will be the normal serum globulins. Pursuing the idea that tissue cells might contain antigenic substances which possess a similar immunological structure to bacteria, one could postulate that these cells and bacteria would be antagonistic. The selective action of bacteria for certain

tissue cells would then be due to lack of antagonism between the cellular components and the bacteria rather than to mutual attraction.

However, if we return to the hypothesis that globulins are produced in response to stimuli from internal antigens, the deficiency of normal serum globulins and the absence of natural antibodies from the serum of very young children could be caused by an insufficiency of such stimuli. As the child grows older, increased quantities of tissue cells are destroyed because of greater wear and tear. When sufficient stimulation is given to the reticulo-endothelial cells the production of globulin will be sufficient to make possible detection of natural antibodies by the use of suitable antigens. The constant destruction of tissue cells and the removal of these cells by the reticulo-endothelial system will thus give rise to fairly constant amounts of both normal serum globulins and natural antibodies.

There is nothing original in the idea of the formation of agglutinins in response to such internal stimuli. Turner, Nisnewitz, Jackson and Berney[13] discuss the production of cold agglutinins in atypical pneumonia and suggest that these antibodies may be formed "in response to an antigen released by the actions of an infectious agent, or agents, upon some tissue, perhaps specifically a component of the respiratory tract". The same authors quote Landsteiner[2] as stating that a similar mechanism may be responsible for the production of the antibodies which are detected in the Wassermann reaction.

The most widely known natural agglutinins are the anti-A and anti-B isohæmagglutinins. These agglutinins are present in the serum of subjects who belong to the blood groups A, B and O, and are responsible for the agglutination of the red blood corpuscles of subjects belonging to incompatible blood groups. Whether a person possesses the blood grouping antigens A and B depends on factors which are inherited, and one hypothesis suggests that the presence of isohæmagglutinins also depends upon inherited factors. Now the group A and B antigens, when inherited, are present in the red corpuscles at the seventh month of pre-natal life (Hyman-Parker[14]). On the other hand, the isohæmagglutinins are rarely detectable at birth, but like the natural bacterial agglutinins, appear in the early months after birth. This suggests that the natural red cell agglutinins are dependent upon similar factors for their production as are the normal serum globulins and the natural antibodies. If the hypothesis of the inheritance of the types of isohæmagglutinins is correct, one would expect occasional "mutations" to arise—that is, subjects who, although belonging to blood group A, B or O, possess no isohæmagglutinins in their serum. In the course of time such subjects would represent a noticeable proportion of the population, and their presence would be obvious. By applying the third mechanism—that stimulation of the production of the agglutinins is caused by non-living antigenic substances which gain entrance to the body by way of the intestinal tract or other routes, or that the agglutinins arise because of stimulation by internal antigens as suggested above—one could postulate that all individuals would produce both isohæmagglutinins. The antigens present on the red cells would absorb the corresponding agglutinins as soon as these agglutinins reached the blood stream, and thus those that were incompatible would be removed.

As a result of the experimental work reported in this article, the opinion is held that the natural Flexner agglutinins do not arise in response to infection by the specific organisms or by organisms which share antigenic components with the specific organisms. It is thought that the stimuli must be either non-living substances which gain entrance to the antibody-forming mechanism from outside the body, or substances of internal origin such as those derived from the tissue cells. Globulin formation, whether that of normal serum globulin or the natural agglutinin of the Flexner type, is believed to be initiated by such stimuli, which are constantly supplied to the antibody-forming apparatus. The type of globulin which is formed will depend upon the presence or absence of a templating antigen in the final stages of globulin formation. From recent work, the statement that for a substance to be antigenic, it must be foreign to the animal into whose blood stream or body fluids it gains entrance, also seems to require revision. It is possible that, when the range of the types of organisms used as antigens is increased, many of the globulins which are now called normal serum globulins will be regarded also as natural bacterial antibodies.

The presence of natural Flexner agglutinins in the serum of rabbits is of practical importance. One must regard with reserve the results obtained in experiments on the antigenic structure of the Flexner organisms, unless the type and titres of the natural agglutinins are known. This is especially so if the antigenic analysis requires the total absorption of Flexner agglutinins from antiserum prepared by the injection of these organisms into rabbits.

The experiments on the heat stability of the agglutinins do not indicate that the natural agglutinins are less heat stable than the immune agglutinins. Gibson[15] found that the natural somatic agglutinins were less heat stable than the natural flagellar agglutinins, and that both types were less heat stable than the corresponding immune agglutinins. In the experiments described in this article no natural flagellar agglutinins were detected. The antigens used for the detection of the natural agglutinins were probably not those responsible for the production of the agglutinins. As has already been stated, the strength of the reaction between an antigen and antibody depends on the closeness of the immunological equivalence of the antigen to the homologous antigen. The effect of heat on a protein is to cause partial or complete denaturation of the protein. This results in alteration of the structure of the protein, because of a rearrangement of the linkages within the molecule, to a degree depending on the stage of denaturation reached. In the case of the denaturation of the natural agglutinins, the first antigens to cease reacting with the heated agglutinins will be those whose immunological equivalence differs most from the homologous antigen, because a slight alteration in the structure of the agglutinin molecule will be sufficient to prevent a combination with the antigen. On the other hand, the exact correspondence of the determinant groups of the homologous antigen with the antideterminant group of the agglutinin will allow the surface pattern of the agglutinin to withstand a greater alteration before this alteration is reflected by a lack of reaction with the homologous antigen. Actually, then, the heat stability of natural agglutinins cannot be determined accurately unless the homologous antigen is used in the test. Another difficulty which arises when the heat stability of the immune agglutinins is compared with that of the natural agglutinins, is that even the same type of immune agglutinins are not uniformly heat stable. The flagellar agglutinins were shown to be more heat stable in the later stages of the infection than they were in the earlier stages. With so many variable factors, conflicting results are to be expected. If, as has been suggested by Hooker and Boyd,[16] an incomplete antideterminant can be expected to be more dissociable than the perfect combining group of the complete antibody, then the heat stability of the antibodies at different stages of an infection will measure the degree of completeness of the structure of the antideterminant. As has already been mentioned, the results obtained in this work show that the agglutinins formed in the later stages of the infection were more heat stable than those formed at the beginning and were therefore more completely "templated" by the antigen. In attempting an explanation, one can postulate that, after the ingestion of the antigenic material by the reticulo-endothelial cells, these cells will be stimulated to produce globulins; that is, the equilibrium of the cell reactions will be altered to one of excess globulin synthesis. The removal of the newly formed globulins from the cell, either because the permeability of the cell is altered (Robertson[16]) or because of the shedding of the surface films of the reticulo-endothelial cells (Sabin[17]), will prevent the globulin synthesis reaction from being stabilized. The synthesis of globulin will proceed until all the antigenic material is removed; but the speed of the reaction will decrease as

the amount of the antigen lessens. In the later stages of an infection, when the reaction is slowing down, the newly formed globulins will be under the templating influence of the antigen for a longer time than at the beginning, and therefore the antideterminant will be more completely formed. If the course of events is as suggested, the antibodies produced in the later stages of an infection will be more heat stable than those produced earlier, although the quantity of antibody which is produced will be less.

The value of the natural Flexner agglutinins for preventing infection cannot be judged from the results obtained. The absence of natural agglutinins of the Flexner type II strain from the serum of non-enteritis patients suggests that infection would be more easily acquired with this strain than with the others. No conclusion can be reached, however, until the types of natural Flexner agglutinins are determined in the serum of subjects living in localities where the prevalent Flexner strain is different from the one in this State. If the absence of natural agglutinins renders a subject more susceptible to attack by an organism, one would expect more cases of dysentery caused by Flexner type V organisms. During the last two years only two such cases have been reported in this State.[1]

SUMMARY.

1. The incidence and concentration of the Salmonella and dysentery agglutinins were determined in the serum of convalescent children who had no history of gastro-enteritis or dysentery.

2. The incidence and concentration of these agglutinins were determined in the serum of children suffering from gastro-enteritis and dysentery.

3. The natural Flexner agglutinins were not detected in the serum of children under three months old.

4. The mechanisms to which the natural antibodies owe their origin are discussed.

5. A speculative hypothesis is offered to explain the origin of normal serum globulin and certain natural antibodies.

6. The hypothesis is extended to explain the presence or absence of isohæmagglutinins in the serum.

7. Experiments on the heat stability of the agglutinins are described and an explanation is offered for the inconsistency of the results.

8. The heat stability of the immune agglutinins formed in the later stages of infection was found to be greater than that of the immune agglutinins formed earlier. An explanation for this phenomenon is offered.

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AMŒBIASIS IN NEW GUINEA, 1943–1944.

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THIS communication is based mainly on a not inconsiderable number of cases of amœbiasis encountered in the course of twelve months in New Guinea. Some comment is made from time to time on a consecutive series of 50 cases encountered in the space of a period of four months. It must be emphasized, however, that our observations and comment are by no means limited to those 50 cases—nor, indeed, strictly to cases we have encountered in New Guinea.

The disease is not rare in Australian troops in New Guinea, and it has occurred, of course, in our troops who served in the Middle East. It would seem probable, therefore, that for some years it will from time to time be encountered in Australia in men who have served abroad. It may even occur in civilians living in not highly developed hygienic conditions and in contact with servicemen or ex-servicemen carriers. (One of us can recall having seen, in 1925, a woman suffering from acute amœbic dysentery; her husband, an ex-serviceman, had suffered from dysentery in the Middle East during the first World War, and was proved to be a carrier.)

Our endeavour, therefore, is not only to record our limited knowledge of the occurrence of amœbiasis in New Guinea, its incidence in Australian troops on service *et cetera*, but also to present some of the clinical pictures of the disease as we have seen it in the course of this war, especially in New Guinea. It is hoped that these points may be of some help to others who have had less opportunity of learning to recognize the disease.

History of Amœbiasis in New Guinea.

How long the disease has existed in New Guinea is unknown. It has, however, been known to exist long since in the islands stretching north-west to South-East Asia. It is endemic in China. Presumably, therefore, the disease was introduced to New Guinea by trade and other contacts. We have encountered it in Japanese prisoners of war.

Major Clive Backhouse has quoted us some interesting facts drawn from his personal experiences over a number of years.

During what may be described as "the German period" (approximately 1895 to 1914), many cases of dysentery were recorded as amœbic in origin, and emetine was freely used. There is good reason to believe, however, that the vast majority of these were of bacillary origin. During the Australian military occupation in the first World War, an increase in the incidence of amœbiasis was believed to have occurred with the advent of soldiers who had previously served in Gallipoli and Palestine. There is one recorded case of amœbic abscess in a soldier. About 1927,

when the goldfields in the Wau area were being opened up, occasional cases of amœbiasis were recognized amongst many cases of bacillary dysentery. Examination of the stools of natives in the area occasionally revealed cysts of *Entamœba histolytica*. However, in the course of some 1,400 autopsies over a period of years, Major Backhouse did not encounter the disease at a post-mortem examination till 1938, when he found a large hepatic abscess associated with an ulcerated caecum.

About 1937, Dr. Martha Koller, of the Lutheran Mission at Finschhafen, reported amœbiasis in Europeans in the locality, and she described a number of clinical conditions other than those commonly recognized (for example, amœbic nephritis, bronchitis *et cetera*). There is no doubt that body cells in urine, sputum and fæces had been mistaken for amœbæ and cysts in many instances. At that time Major Backhouse investigated series of stools from Europeans and natives in the area and found *Entamœba histolytica* in a small percentage. Some native villages near Sattelberg showed a higher rate than the general average.

Dr. G. M. Heydon found *Entamœba histolytica* cysts in Mount Hagen natives.

Incidence of Amœbiasis in Australian Troops in New Guinea in the Second World War.

At the time of writing, security forbids us from quoting definite figures for the incidence of amœbiasis in Australian troops in New Guinea. Against the background of total admissions to an Australian general hospital, the incidence is small. However, the percentage of cases of amœbiasis in some hundreds of cases in the dysentery wards was 8·5. Fifty cases were diagnosed in one period of four months.

An analysis of the genesis of these 50 cases reveals that 25 of the patients, out of all contact with any troops who had served in the Middle East, appeared beyond reasonable doubt to have contracted the disease in New Guinea. In 12 of the 50 cases the history suggested that the initial infection had occurred in the Middle East. The remaining 13 patients were men who had not been to the Middle East, but who were in units which had formerly served in that theatre of war. In this connexion the following incidents are interesting. When five cases of amœbic dysentery occurred in a relatively small unit, the whole unit was examined and two apparently healthy cyst-carriers were discovered; both men gave histories of dysentery in the Middle East. On another occasion we encountered a patient who dated recurrent attacks of diarrhœa to an acute infection in an army camp in Victoria, where at that time were congregated many soldiers recently returned from the Middle East.

Of the infections which appear definitely to have been contracted in New Guinea, the histories suggest as localities of origin Port Moresby, Milne Bay, Buna, Salamaua, Lae, Finschhafen, Madang and the Wau district. (At the time of writing we have not had the opportunity of investigating possible cases from other areas further west.)

The evidence, therefore, suggests that whatever the actual incidence of amœbiasis may be in New Guinea (we have no means of assessing this at present), the disease is endemic over a large part of the country and probably over the whole island.

Clinical Experiences of Acute Dysentery and Chronic Diarrhœa.

Of the 50 patients already mentioned, 11 were admitted to hospital with active diarrhœa associated with the passage of blood and mucus in the stools. Seven of the 11 gave histories of previous attacks of diarrhœa; 33 patients out of the remainder gave histories of recurrent attacks of diarrhœa. Thus in 40 cases earlier manifestations of the disease had been unrecognized.

Those who gave histories of recurrent diarrhœa usually complained of more or less mild attacks of short duration, recurring at variable intervals of about four to eight weeks, and usually not noticeably influenced by simple remedies. It must be emphasized at this stage that many soldiers are apt to ignore such "minor episodes", and careful questioning is always necessary.

In several cases we have investigated, failure of the diarrhœa to respond to sulphaguanidine had previously been attributed to the presence of sulphaguanidine-resistant strains of dysentery bacilli. In our experience sulphaguanidine-resistant strains of dysentery bacilli are rare. In a perusal of some hundreds of case records, the incidence of such strains is less than 0·5%. In any case of dysentery, therefore, whether a recognized bacillus has been isolated or not, resistance to sulphaguanidine therapy must at least suggest the possibility of amœbiasis, whether as a basic infection, a concomitant infection or an old infection reactivated by recent bacillary invasion.

It has been believed by some observers that *Entamœba histolytica* does not become actively pathogenic in the bowel unless the way is paved for it by the incidence of bacillary infection. We cannot comment on this point, but we have encountered "double infections", bacillary and amœbic, on a number of occasions—for example, three times in the present series of 50 cases. How often "double infections" do occur we have not been able to assess, for in many cases sulphaguanidine has been administered before the patient has reached hospital.

In a small percentage of cases of amœbiasis there is no history of diarrhœa whatever, and the patient is admitted to hospital with other manifestations of the disease, commonly hepatic in origin.

Hepatitis.

The invasion of the liver by *Entamœba histolytica* is, from a diagnostic viewpoint alone, one of the most important features of the disease, for it is upon the resultant hepatitis that so much of the symptomatology of amœbiasis depends.

In 25 of 50 consecutive cases of amœbiasis, hepatomegaly was easily demonstrable. Usually the lower border of the liver was one to two fingers' breadth below the costal margin and considerable tenderness existed. In the majority of the other 25 cases in the series, although hepatomegaly could not be demonstrated, some degree of apparent hepatic tenderness existed.

It is to be borne in mind, therefore, that among soldiers and ex-soldiers (especially among those who have served in the tropics), amœbiasis is prominent in the differential diagnosis of hepatic enlargement.

The onset of hepatitis may be acute. In our experience, such patients appeared "toxic", had high temperatures and complained of pain in the right hypochondrium and under the right shoulder-blade. The pain was aggravated by any exertion, and bore no noticeable relationship to meals. In one such case there was in addition a complaint of pain in the right renal distribution. Constipation was the rule. Examination in these acute cases revealed a greatly enlarged and exquisitely tender liver. Jaundice is rarely seen in such cases and it is never more than an "icteric tinge", as was seen in one of our patients.

The toxæmia, which is always evident in acute cases, may overshadow all other manifestations. One of us saw in Syria a patient exhibiting extreme toxæmia and gross abdominal distension, in whose case a justifiable provisional diagnosis of typhoid fever had already been made. It was only after reduction of the distension that an enlarged and acutely tender liver became evident, and this finding pointed the way to a correct diagnosis.

Subacute and chronic hepatitis appear to be much more common than acute hepatitis. These conditions are apt to produce a variety of symptom-complexes, and it is an appreciation of these which helps considerably in the differential diagnosis.

Hepatomegaly may be associated with gastro-intestinal symptoms, symptoms of right renal disorder, or even pulmonary manifestations, with debility and vague complaints of ill-health which may simulate a neurosis, and so on.

The degree of hepatic enlargement in the subacute and chronic cases has been variable; usually the lower border of the liver is not more than two fingers' breadth below

the costal margin. The degree of tenderness too is variable—usually it has not been excessive, but always it has been present.

The response to emetine in cases of amœbic hepatitis is noteworthy. The response must always be carefully observed, espcially in cases in which the diagnosis is unconfirmed by microscopic examination of the stools, for in such instances confirmation of the diagnosis is largely dependent on the response to emetine. In acute cases the response to emetine has been more or less dramatic; the liver has rapidly decreased in size, pain and tenderness have diminished at the same time, and commonly there has been a rapid reduction of fever. In the less acute and chronic cases the response to emetine has been less dramatic, though still definite. Six or seven daily injections of emetine hydrochloride have sometimes been required before we have been quite sure of the response. We are of the opinion that, should there be any doubt as to the response at the end of a course of ten injections, then the provisional diagnosis is almost certainly wrong. It is an interesting and, we believe, an important fact that the patient who really has amœbiasis usually expresses an opinion that "the treatment is doing him good", even after two or three injections of emetine.

Liver abscess is considerably emphasized by textbooks, and when it occurs it is a serious matter. It is, however, rare. One of us encountered a case in civil practice in 1930, and diagnosed the condition in a British soldier in Syria; but up to date we have not encountered a case in New Guinea.

Pain in the Right Iliac Fossa.

A favourite habitat of *Entamœba histolytica* is the caecum. Seven of the 50 patients referred to complained of a nagging pain in the right iliac fossa. Three of the seven patients had previously had an appendicectomy without relief of symptoms, and in addition one of the three, subsequent to appendicectomy, had had a urinary investigation. Yet another patient had been admitted to hospital with a provisional diagnosis of "chronic appendicitis".

In addition to these seven patients, seven others, who made no complaint of pain, none the less exhibited tenderness in the right iliac fossa. Sometimes a thickened caecum has been palpable.

Pain and tenderness in the right iliac fossa in amœbiasis bear some points of contrast with the pain and tenderness in the left iliac fossa in bacillary infections. The response of these symptoms and signs to emetine has always been definite in our experience.

Before the picture is left, it may be added that one of us has twice seen appendicectomy performed for acute abdominal symptoms simulating acute appendicitis, acute dysentery (subsequently shown to be amœbic) becoming evident within twenty-four hours of operation. Both cases occurred in the Middle East.

Dyspepsia.

Most commonly the symptoms of dyspepsia have been "indefinite". Generally the complaint has been of loss of appetite, some abdominal discomfort and occasionally vomiting after meals for no apparent reason, and such symptoms have not uncommonly been associated with histories of attacks of intestinal colic and diarrhœa, sometimes alternating with constipation.

Two patients admitted to hospital in New Guinea with a provisional diagnosis of "functional dyspepsia" had enlarged livers and cysts of *Entamœba histolytica* were found in the stools. Both patients made rapid recoveries under treatment.

To an Australian general hospital in Egypt, within a period of five months, were admitted several patients with amœbiasis evacuated from a forward area for investigation, with the label "peptic ulcer not yet diagnosed". Such patients complained of discomfort or even some pain in the epigastrium, usually occurring about a quarter of an hour after meals, and lasting from a quarter to half an hour. The pain was completely unaffected by alkalis or by vomiting, which sometimes occurred; the pain did not wake the patient at night. All of these patients exhibited hepatomegaly and subsequent investigations clinched the diagnosis of amœbiasis. It is obvious, of course, that this symptom-complex bears only a superficial resemblance to that of peptic ulcer. The pain appears to be related to the increased postprandial functional activity of an already engorged organ. We have not met this symptom-complex in New Guinea, but we feel it is at least worthy of recording. Nor have we encountered in New Guinea such a case as was met in an Australian general hospital in Palestine in which a patient with severe gastric symptoms and considerable hepatic enlargement, thought to be suffering from carcinoma of the stomach, was subsequently discovered at autopsy to have had amœbiasis with liver abscess.

"Debility."

Two patients, complaining of severe physical exhaustion, some dyspepsia and loss of weight, were admitted to hospital with the provisional diagnosis of "debility". In both instances an enlarged and tender liver was found. *Entamœba histolytica* cysts were recovered from the stools of one of the patients. Although this was not achieved in the other case, the prompt response to emetine confirmed the suspected diagnosis. Both patients made uninterrupted progress and were discharged to duty.

Splenomegaly.

Splenomegaly is probably not of common occurrence in amœbiasis; we have, however, encountered two cases in which splenomegaly was a more prominent feature than the slightly enlarged and tender liver. Both patients, suspected of having malaria, but without proof, failed to show any response to anti-malarial treatment. Subsequent investigations revealed the existence of amœbiasis, and the splenic enlargement disappeared under treatment. One of us encountered two similar cases in the Middle East.

If the presumption that splenomegaly is secondary to hepatitis is correct, it is perhaps surprising that splenic enlargement is not met more often.

The Renal Syndrome.

In Egypt a young soldier was admitted to an Australian general hospital complaining of pain in the right lumbar region radiating to the right groin and testicle. He had complained of this pain intermittently for several months and had twice undergone full urinary investigations in hospital as well as some lesser investigations in a field ambulance. He had tenderness in the right costo-vertebral angle and in the upper lumbar region, but no abnormality was found in his urine. There remained to be explained a considerably enlarged and tender liver. *Entamœba histolytica* cysts were found in the stools, and under treatment the subsidence of the hepatomegaly was accompanied by the disappearance of the renal pain. As the patient considered the pain was worse when he lay on his back, it was thought that the genesis of the pain may have been mechanical.

We have not encountered in New Guinea just such a case in which renal pain was the patient's outstanding symptom; but in one case a soldier complained, as his initial symptom, of a severe aching pain in his right testicle, particularly on exertion, and this preceded toxæmic manifestations, on account of which he was soon afterwards admitted to hospital.

Pulmonary Manifestations.

In the Middle East official attention was drawn to the association with hepatitis of pulmonary signs, especially at the base of the right lung:

> Abnormal signs at the base of the right lung (at the base of the left lung in the rarer left hepatic lobe infections), i.e. consolidation, pleurisy with or without effusion, are, when present, of considerable diagnostic importance. Unless their frequent association with amœbic hepatitis be recognized, they may mask the true diagnostic picture.

In that theatre of war one encountered such cases occasionally, but in our experience in New Guinea these have been uncommon. The details of one case exhibiting pulmonary signs is quoted subsequently.

Healthy Carriers.

Included in the 50 consecutive cases referred to were two soldiers who, though without any symptoms of ill-health, repeatedly passed cysts of *Entamœba histolytica* in the stools. Each of these gave a history of an isolated attack of diarrhœa two years or so previously, one in Crete, one on board ship returning from the Middle East. More recently we have in the routine examination of a kitchen staff "unearthed" a carrier with no symptoms. The "carrier" problem is serious.

Cutaneous Amœbiasis.

Cutaneous amœbiasis is rare, and we have not encountered a case during twelve months in New Guinea.

Diagnostic Experiences.

Clinical Histories and General Examination.

Even if we face the charge of a platitude, we emphasize the importance of the clinical history. In many cases minute detail is of paramount importance. Any soldier who has had diarrhœa during his army service (and that applies to most), and who has obscure symptoms, especially if accompanied by any degree of hepatomegaly, must be closely questioned regarding his intestinal history. In many instances we have found it quite insufficient to ask what attacks of diarrhœa or dysentery the soldier has had. We have frequently had patiently to "jog the memory" for half-forgotten and apparently trivial instances. It is worth seeking the history of the initial attack, not only in time, but in place—for example, Syria and the Lebanon have been not uncommon sources of the disease.

Experience has taught us to be constantly on the alert for the disease.

Likewise, too, with regard to physical examination, it is an awareness of how much, and indeed how little, to expect in the way of physical signs which helps. The finger-posts may be misleading or absent.

We believe that it has been a lack of understanding of the symptoms and signs which has led to the missing of a number of cases previously which we have picked up during the past twelve months and more.

Stool Examinations.

In a series of 50 cases, vegetative *Entamœba histolytica* was found in the stools of six and in the scrapings from ulcers seen through the sigmoidoscope in five others, while in 20 cases cystic or precystic forms of the organism were found. Thus, in 19 cases out of 50 we were unable to recover the organism even after repeated stool examinations and investigation of sigmoidoscopic "scrapings". Difficulties in recovering the causal organism in a high percentage of cases has been the experience of others, and is, of course, well recognized.

Manson-Bahr, in his book "Dysenteric Disorders", quotes D. L. MacKinnon in regard to stool examinations: "In 1,680 fæces examined only once, the percentage of positive findings was 4·3, but after six examinations, it was increased to 34·6."

Our personal experiences during the past few years have been somewhat better; but the fact remains that in a high percentage of cases *Entamœba histolytica* cannot be found in the stools even after a careful and more or less prolonged search.

It will be seen, therefore, that negative results to stool examinations do not necessarily exclude the disease from the diagnosis, and such negative findings in the face of a suggestive history and clinical examination and a subsequent satisfactory response to emetine therapy, do not appear to be unduly important.

There are some points in regard to the collecting of stools for examination and allied matters which by experience we believe to be worthy of attention.

1. For the purpose of examination a loose stool is preferred, and this should be passed into a slightly warmed pan. The whole specimen may be sent to the pathologist, if he is "on the spot"; or, if this is not practical, a trained person may select from the stool a likely-looking piece of mucus or mucopus, especially if it is blood-stained. This and other pieces may then be transferred to a suitable container and sent to the pathologist. It is important that there should be a minimum of delay between the passage of the stool and its examination, and that the specimen should not be allowed to dry or become chilled appreciably, especially when there is any reason to suspect the possibility of the presence of vegetative forms. Except when diarrhœa has been present, it has been our practice to obtain suitable material after a mild saline purgative.

2. It has been suggested that, when several stool examinations have given negative results, an injection of emetine hydrochloride should be given, and a stool examined on the following day. In a considerable number of cases thus investigated in the Middle East, as well as in New Guinea, we have not encountered a single instance in which such a practice has proved effective.

3. On several occasions when the clinical picture was suggestive and ulceration was evident sigmoidoscopically, a gentle scraping about the edge of the ulcer with a blunt spoon produced confirmatory evidence when stool examinations had given negative results. The circumstances in which such a diagnostic practice may present themselves are likely to be few, but it is a method of obtaining diagnostic confirmation which it may be worth while remembering on occasion.

4. Limitation of staff and of completely suitable equipment in the field has been largely responsible for preventing us from investigating the diagnostic possibilities of concentrating stool deposits for examination. By such a method we isolated cysts of *Entamœba histolytica* on one occasion; but at present it is quite impossible for us to assess the procedure.

5. Other points in stool examinations are the following. Vegetative and cystic forms of other intestinal protozoa (for example, *Entamœba coli*, *Endolimax nana*, *Iodamœba butschlii* and amœbæ of unidentified species) have not infrequently been found to cohabitate with *Entamœba histolytica*. Flagellates are occasionally seen. It may be argued with some apparent reason that conditions highly favourable to the existence of any one of these is likely to be favourable to others. Even if *Entamœba histolytica* has not been found, we have regarded the presence of other protozoans as a strong indication for a prolonged and careful search. A comparable position arises in regard to the finding of Charcot-Leydon crystals in the stools. Some observers have regarded Charcot-Leydon crystals as pathognomonic of amœbiasis. We look upon this belief as incorrect, for we have found the crystals occasionally in stools of other nature when there has been no reason whatever to suspect amœbiasis, and we have seen them in the stool of a patient suffering from infective hepatitis. We have, however, always regarded the presence of Charcot-Leydon crystals as a good indication for further search for amœbæ.

The type of exudate has varied. In more than one case of acute amœbic dysentery the exudate has been of a typically so-called "bacillary" character, although attempts to isolate a bacillus have failed. Whilst classical pictures of "amœbic exudate" have been seen in acute cases, an exudate of indefinite nature has more frequently been reported. "Indefinite exudate" is a common report on stools from patients with subsequently proved bacillary dysentery. We have thought, therefore, that in most cases the fact that an inflammatory exudate is present and indicative of active disease, is of more importance than any particular descriptive name. A point of importance to remember, we have found, is that in acute or subacute dysentery of undetermined type the persistence in the stools of a cellular exudate, in spite of adequate amounts of sulphaguanidine, should always arouse suspicion of amœbiasis. In chronic amœbiasis an exudate is commonly absent, and its absence is of no significance whatever.

Sigmoidoscopic Examinations.

While we can find little excuse for omission of the use of a sigmoidoscope in any case of dysentery, it has been our experience that the positive diagnostic value of the sigmoidoscope in amœbiasis is somewhat limited.

1. In our cases of acute amœbic dysentery, the rectum and sigmoid colon have been found diffusely inflamed and affected by widespread ulceration. Ulcers have usually been of irregular shape and have varied in size from a millimetre to a centimetre in the longest axis. Classical amœbic ulcers have seldom been seen, and, for example, in the investigation of 50 consecutive cases of amœbiasis, such an ulcer was seen only once. It is perhaps worth noting that, unlike the ulcers of bacillary dysentery, the ulcers in acute amœbic dysentery may be gently scraped without pain.

2. In longer-standing cases healed amœbic ulcers have been seen not infrequently. They have been recognized as tiny punched-out ulcers not more than one or two millimetres in diameter. The cavity of the ulcer looks somewhat like a pinhole, and the edge may be slightly œdematous, but everywhere, including the floor of the ulcer, epithelium is present. The surrounding bowel wall may or may not show evidence of inflammation. Once seen, the appearance of these lesions is easily remembered. They can be quite well recognized through the ordinary sigmoidoscope lens; but detailed examination has been greatly facilitated by the use of a telescopic lens attachment.

3. However, by far the most common sigmoidoscopic picture we have seen in chronic cases is one of hyperæmia, variable œdema and the presence of mucus in excess. Sometimes mucus is present in considerable amounts, and often it is fæcal-stained. Commonly the mucus is seen in shreds lying about the bowel wall and extending as thin "strings" from surface to surface across the lumen. In short, the appearance is that of a "dirty bowel". We have not regarded this picture as in any respect typical of amœbiasis; we have looked on it as evidence of disease, but not of the type of disease.

4. Hæmorrhages beneath an apparently intact mucosa showing a mild degree of inflammation have been occasionally seen. Whilst we are not suggesting that such submucous hæmorrhages are pathognomonic, actually we have not witnessed them except in cases of subacute amœbic dysentery.

5. Finally, it must be admitted that in the majority of chronic cases we have found no abnormality of significance on sigmoidoscopic examination. We have become convinced that, in chronic cases at least, the absence of sigmoidoscopic findings is of no significance.

Dysentery of Undiagnosed Type.

Bound up with the diagnosis of amœbiasis is the management and investigation of dysentery of undiagnosed type which is resistant to sulphaguanidine. It has been our practice in such instances to allow several days to lapse after the cessation of treatment to permit all sulphaguanidine to be passed from the bowel. A sigmoidoscopic examination has then been made, and a swab for cultural examination taken from the bowel—from the site of an ulcer, if one was found. If no growth is obtained from the culture material, the procedure has been repeated up to three times. If the results have been persistently negative, we have regarded the condition as unlikely to be due to a bacillary infection, and have intensified our search for *Entamœba histolytica*.

The "Therapeutic Test" with Emetine.

The "therapeutic test" with emetine has been of considerable diagnostic value. Sufficient has already been written to indicate both the circumstances in which the test should be carried out and what constitute positive and negative responses.

Treatment.

Our practices in treatment have not departed appreciably from those commonly employed.

We have commenced with the administration of emetine hydrochloride, one grain per day by intramuscular injection for ten days, the patient remaining in bed during this period. Usually on the sixth day of such treatment "Carbasone" therapy has been started (0·25 milligramme by mouth, morning and night), and this also has been given for ten days. At the completion of this emetine hydrochloride and "Carbasone" combination, emetine-bismuth-iodide has been given, one grain on the first day, two grains on the second day, three grains on the third day and thereafter for eight days. Emetine-bismuth-iodide has been given in the evening, and we have found that phenobarbital (one grain) an hour earlier is a useful preliminary to the evening dose of emetine.

At a short interval after completion of the foregoing course of treatment, the patient has had a sigmoidoscopic examination, and three stools have been examined for amœbæ or cysts. If he has been reported "clear", we have then usually discharged him to a convalescent depot or to his unit (according to his general condition), with the instruction that he be "reviewed" at intervals of one, three and six months.

We have encountered only one patient who continued to harbour cysts of *Entamœba histolytica* after this course of treatment, and so far there has been no evidence of a recurrence in any of the cases reviewed at a later date.

Vomiting and some diarrhœa are apt to occur when emetine-bismuth-iodide is given, but such cases have been infrequent and rarely troublesome. Only once has tachycardia interfered with the orderly progress of the course.

The conditions in which a field hospital works have militated against any extensive use of "Yatren"' retention enemata. In one instance in which "Yatren" was used, the patient continued to pass cysts in spite of a course of the treatment, and had to be evacuated to base.

Reports of Cases.

Some points of importance previously mentioned are illustrated in résumés of the following five cases.

CASE I.—Early in February, 1944, Corporal R.B. was admitted to another medical unit suffering from benign tertian malaria. Towards the end of routine anti-malarial treatment he experienced nausea, weakness, some epigastric pain and constipation. After discharge to his unit, these symptoms became more severe, and in addition he complained of dragging pain in the right hypochondrium and fever. He was admitted to a field ambulance. While he was under observation there for two days, his temperature was observed to vary between 104° and 105° F. Repeated examination of blood films failed to reveal malarial parasites. He was; however, given quinine intravenously and by mouth, and received a total of 40 grains within thirty-six hours, without effect. He was then evacuated to hospital, where he arrived on February 27. During the course of his evacuation, and twelve hours before his actual admission to hospital, he suffered from acute diarrhœa with the passage of blood and mucus. After his admission to hospital we obtained a history of recurrent attacks of diarrhœa in Syria and elsewhere in the Middle East, and we learned that after a further attack at Goodenough Island in December 1942, he had been evacuated to Australia with amœbic dysentery.

On examination of the patient, his temperature was 104·4° F. He looked "toxic" and gravely ill, and was mildly confused at times. Apart from the usual signs that commonly go with acute dysentery, examination revealed a greatly enlarged and exquisitely tender liver extending five fingers' breadth below the costal margin. Slight icterus of the conjunctivæ was observed. Our provisional diagnosis was (i) amœbic hepatitis, (ii) bacillary dysentery (coexistent and complicating).

Stool examination revealed a bacillary exudate, and a Flexner bacillus was subsequently recovered. We were unable to find amœbæ or cysts, but did not persist in search, as his condition demanded immediate treatment. We did not hesitate in the diagnosis of amœbic hepatitis as the primary condition, because of the previous history, the greatly enlarged liver—which could not be explained by bacillary dysentery—and the recent onset of symptoms of bacillary dysentery, the probable incubation period of which, we feel sure, would be of considerably shorter duration than the patient's history of his recent illness.

Sulphaguanidine treatment was commenced at once, and, as the patient was seriously ill, we were not justified in

withholding emetine. Improvement began immediately, and was maintained. The diarrhœa subsided quickly. The liver size and tenderness rapidly diminished. After a fairly rapid defervescence, we were somewhat surprised that the patient continued to have an evening rise of temperature, till on March 9 he appeared not so well and complained of spasmodic pleural pain on the left side. On March 12 he was found to have a pleural effusion at the base of the left lung, confirmed radiologically. The white cells then numbered 17,400 per cubic millimetre (neutrophile cells 58%, lymphocytes 31%, monocytes 8%, eosinophile cells 3%). The development of an hepatic abscess was feared. By this time the courses of sulphaguanidine and emetine treatment had been completed. A further course of emetine therapy was commenced. The effusion was rapidly reabsorbed, and the patient's further progress was uninterrupted. On March 15 the white cell count had fallen to 12,800 per cubic millimetre, and all clinical signs of the effusion had disappeared a day or two later. His convalescence, interrupted by a relapse of benign tertian malaria on April 1, was otherwise uneventful, and he was subsequently discharged from hospital, apparently well.

This was a most unusual type of case, but it is quoted as an illustration of a number of interesting points.

CASE II.—Private T.S. had two severe attacks of dysentery in Palestine and Egypt in 1941, and had had mild recurrent attacks of diarrhœa since. He was admitted to hospital complaining of nagging pain in the right iliac fossa, which had been present intermittently ever since. No fever had been observed. Examination revealed a palpably thickened, tender caecum and a tender liver enlarged a good finger's breadth below the costal margin. The stools were found to contain cysts of *Entamœba histolytica*. The institution of treatment was promptly followed by the disappearance of symptoms, and the liver was quickly "no longer palpable or tender".

CASE III.—Private G.M. had not been to the Middle East. Five months before his admission to hospital, near Wau, he had suffered from acute diarrhœa; since then he had been subject to recurrent attacks. He was admitted to hospital during one of these. No definite findings resulted from stool examination, and sulphaguanidine treatment was commenced. During the following week, he received over 100 grammes of sulphaguanidine without any noticeable effect on the diarrhœa. A sigmoidoscopic examination was then made, and the bowel was noted to be "inflamed and covered with mucoid fæces in many areas". Further attempts at culture were made with negative results, and repeated stool examinations failed to reveal amœbæ or cysts. The diarrhœa continued. Amœbiasis being suspected, though unproven, it was decided to give trial doses of emetine. The response was most striking. The diarrhœa ceased on the second day, and the patient thereafter recovered quickly. There has been no recurrence to date.

CASE IV.—Sergeant S.L. had dysentery at Alamein, and thereafter suffered recurrent attacks of abdominal colic and diarrhœa. Whilst in action in New Guinea in September, 1943, he had a "near miss", and subsequently complained of anorexia, of occasional vomiting after meals, of insomnia, of loss of weight and of a general feeling of ill health. In view of the "near miss", it had been suggested that his symptoms were functional; however, there remained to be explained the genesis of an enlarged and tender liver and tenderness in the region of the caecum. The stools were found to contain precystic forms and both immature and mature cysts of *Entamœba histolytica*, and he made a rapid recovery under treatment.

CASE V.—Private O.V.D. had not served in the Middle East. He was admitted to hospital complaining of febrile symptoms, present the past twenty-four hours. He gave a history of a fairly severe attack of dysentery near Salamaua in September, 1943, and of recurrent mild attacks since; he was now constipated. On his admission to hospital, his temperature was 101·4° F., and the liver was palpable one finger's breadth below the subcostal margin and was tender. No malarial parasites were found in the blood film. Microscopic examination of the stool revealed a scanty cellular exudate of indefinite character, but no amœbæ or cysts were found on two occasions. A sigmoidoscopic examination was then made, and mild patchy inflammation of the bowel mucosa was observed, with some excess of mucus in the lumen. Cultural examination of material from a swabbing gave negative results. Irregular fever continued from the time of his admission to hospital till the eleventh day, when the temperature became normal. Repeated examinations of blood films still revealed no malarial parasites.

After three days of normal temperature, a shivering attack occurred and fever returned. Examination of a blood film now revealed a slight infection with *Plasmodium falciparum*. Quinine treatment was commenced, but the temperature continued to rise, and on the following day the patient appeared fairly ill. Examination of a further blood film gave negative results, and the intravenous administration of quinine was without effect on the temperature. The patient was now complaining of pain in the right hypochondrium and under the right shoulder-blade. The liver had become enlarged to two fingers' breadth or more below the costal margin, and it was increasingly tender. After further unsuccessful search for amœbæ and cysts, emetine treatment was commenced. Within twenty-four hours the temperature became normal, and it remained normal thereafter; symptoms and signs rapidly disappeared, and the patient made an uninterrupted recovery.

This case is interesting because the amœbiasis appeared to have been activated by the malaria.

Summary.

1. Brief comment is made on what is known of the history of amœbiasis in New Guinea.

2. Comment is made on the incidence of amœbiasis amongst servicemen in New Guinea.

3. Clinical experiences of the disease during the course of this war are given, with special reference to cases encountered in New Guinea. These experiences relate to clinical pictures, diagnosis and treatment.

Acknowledgements.

We acknowledge with gratitude the information and assistance we have received from Major C. T. Backhouse. Our thanks are due to Major-General S. R. Burston, Director-General of Medical Services, for permission to publish this paper.

Reports of Cases.

A CASE OF CARCINOMA OF THE RENAL PELVIS.

By M. C. FOWLER,
Medical Student, Royal Adelaide Hospital.

Clinical Record.

THE patient, a female, aged eighty-four years, was admitted to the Royal Adelaide Hospital on August 13, 1944, suffering from hemiplegia. Examination of the urine revealed a heavy cloud of albumin and blood, the presence of which was fairly constant. She died a fortnight later. One day before death signs of gangrene appeared on her nose and feet.

Post-Mortem Examination.

Scattered in the substance of both lungs were round, circumscribed areas tending to shell out like the cut testicle, and exuding on pressure a pus-like material from the pinkish, mottled surface. There were approximately fifteen to twenty such areas in each lung, the largest being about 1·25 inches in diameter.

The pelvis of the right kidney was dilated and filled with pus-like material. The medulla of the kidney was destroyed, and was represented by a soft, mushy mass.

Examination of the brain revealed an area of softening in the right *corpus striatum*.

The heart was fibrotic, the coronary vessels were atheromatous. Ante-mortem clots were found in atheromatous patches in the aorta.

Comment.

At the time of examination of the patient, the condition was considered to be an abscess in the kidney, discharging into the pelvis, associated with bronchopneumonic areas in the lungs. Cultural examination of material from the kidney gave negative results. Microscopic examination of the kidney revealed that what was thought to be pus was really cancerous tissue, which had become a necrotic fluid mass.

The cell structure was variegated. The cells were mostly large polygonal structures with a darkly stained, round nucleus. They were arranged in sheets which invaded the kidney. There were extensive areas of necrosis. In the lungs the same masses of cells were present, undergoing necrosis at small points.

The condition was considered to be a carcinoma of the renal pelvis with secondary deposits in the lungs. The possibility that the malignant process might have originated from a papilloma was taken into account. The gangrenous areas were due to emboli from the atheromatous aorta.

Acknowledgement.

I wish to thank Professor J. B. Cleland for permission to publish this report.

Reviews.

A HANDBOOK OF PSYCHIATRY.

THE first edition of the "Manual of Psychological Medicine" was published two years ago.[1] The second edition contains various additional sections dealing with such matters as the pitressin diagnosis of epilepsy, the mental aspects of Parkinson's disease, cerebral malaria, mental disturbances associated with vitamin deficiency, and prefrontal leucotomy. There are also some additional sections in the chapter on legal aspects. In a description of the character changes which may follow epidemic encephalitis the author mentions the case of a man of twenty-five, presenting the signs of Parkinsonism in a mild form and complaining of the impulse to commit sexual assaults, who requested sterilization. Dr. Tredgold says that castration was performed on his recommendation, but he does not record the subsequent behaviour of the patient.

In the section on electrically induced convulsions, it is stated that fits are caused daily for a minimum of ten days, but that they may be increased up to fifty or sixty. This is much more intensive and extensive than is the usual practice.

This work retains its practical and clinical character and is intended to convey to student and practitioner both an adequate survey of the whole field of psychological medicine and sound advice on the actual handling of patients. The book is essentially descriptive and realistic and little space is devoted to speculation. We have no hesitation in stating that the student who uses this book will base his knowledge of psychiatry on a sound foundation.

A TEXTBOOK OF GYNÆCOLOGY.

THE chief criticism that can be directed at the fourth edition of Wilfred Shaw's "Textbook of Gynæcology"[2] is that it differs too little from its predecessors. Although its publication must have been delayed and embarrassed by wartime conditions in England, these cannot be held responsible for a number of aspects from which this book is not sufficiently up to date.

The opening chapters on anatomy, histology and physiology are excellently done, without unnecessary detail. The anatomical descriptions are good, but insufficient emphasis has been laid on the cardinal function of Mackenrodt's ligaments in supporting the uterus. That the author does not subscribe fully to this view of their importance is suggested in a later chapter, when he states that the reason why complete tear of the perineum is rarely associated with prolapse is because of the exceptionally good tone of the two *levator ani* muscles in their attempt to close the bowel. Were this explanation correct, the treatment of uterine prolapse could be largely transferred from the realm of surgery to that of muscle reeducation.

The chemistry of the sex hormones is simply and briefly described, with the advice to students to consider their work theoretically in terms of the actual hormones and to confine their prescribing to the preparations of one particular firm.

In discussing menopausal hæmorrhage, the author indicates clearly the necessity for regarding all irregular or excessive hæmorrhage at that time as pathological, and for investigating every case thoroughly so that uterine carcinoma will not be missed in its early stages.

For routine vaginal examination Shaw finds "the self-retaining bivalve speculum of Cusco or some modification of it" the most satisfactory. Most Australian gynæcologists will prefer Sims's speculum, aided when necessary by a vaginal elevator, and with the patient in the Sims's modification of the left lateral position. It is strange to see three illustrations of Ferguson's speculum, an instrument rarely used in this country except for vaginal instillations.

Throughout the book there is evidence of the author's wide knowledge of sound gynæcological principles and practice. But there are also many opinions and pronouncements with which we are at variance, and it will be of value to indicate some of these.

At times the author tends towards over-simplification, so that the dogmatism of certain statements suggests that the partial truth they express represents the whole truth. For instance: "with carcinoma of the cervix the continuous hæmorrhage is always accompanied by an offensive discharge"; "the symptoms of acute gonorrhœa develop within three days of infection"; "if reddening of the ducts (of Bartholin) is produced by any other condition (than gonorrhœa), such cases are exceptional"; operation for ruptured ectopic gestation with diffuse intraperitoneal bleeding "should always be undertaken, however desperate the patient's condition", for there is "very little risk of the patient dying under anæsthesia". The truth is that continuous hæmorrhage due to carcinoma of the cervix is not always accompanied by an offensive discharge; acute gonorrhœa may take considerably longer than three days to incubate; reddening of Bartholin's ducts may well be due to the anaerobic streptococcus which is here a commoner cause of bartholinitis than gonorrhœa; there is always a risk of an exsanguinated patient's dying under anæsthesia, and at the present day of swift and easy replacement of blood loss before, during and after operation, there is no excuse for the omission of such necessary aids.

In the discussion on chorionepithelioma following hydatidiform mole the value of serial quantitative Aschheim-Zondek tests in diagnosis and prognosis is not mentioned, and the statement that "if the reaction is positive after 15 days from the abortion of the mole chorionepithelioma should be suspected" is misleading and inaccurate. Among the methods of treating *pruritus vulvæ* the oral use of hydrochloric acid, as advocated by Swift, of Adelaide, is not included, yet this method has a definite place and, particularly in hypochlorhydric subjects, may achieve conspicuous success. In noting the frequency of conception following hysterosalpingography with lipiodol, Shaw makes a suggestion common with a number of writers that the cause of the good results is the preceding instrumental dilatation of the cervix. This assumption is not correct. Australian surgeons have to our knowledge performed some hundreds of hysterosalpingographies with highly satisfactory results and without the need either of preliminary cervical dilatation or of using an obturator which passes more than half an inch up the cervical canal. We also disagree with the suggestions that, with an efficient technique, an unsuccessful test may be due to the leakage of lipiodol alongside the canula without the operator's knowledge, and that in the usual technique of a Rubin's test general anæsthesia is employed.

In the discussion of the treatment of cervicitis and endocervicitis disproportionate reference is made to surgery which nowadays is rarely indicated for cervical infection unaccompanied by laceration. Electrocoagulation of the endocervical canal and portio is surer, deals efficiently with bacteria, sacrifices no unnecessary tissue, and restores the cervix to a virtually virginal state.

In two chapters the author has employed repetition for the sake of emphasis. The first, on hormone therapy, follows that on disorders of menstruation; and the second, on uterine prolapse, recapitulates basic details of anatomy. This repetition is unnecessary, and in the chapter on hormone therapy is liable to be confusing, for there is not always correspondence of detail in the two chapters. In the discussion on the treatment of menorrhagia testosterone is not included, but the possibility of good results is suggested from the use of anterior pituitary sex hormone, of the clinical value of which there is little scientific evidence. Shaw's emphasis on the importance of conservation of the ovaries when removing the uterus for menorrhagia is timely and should be mentioned in more textbooks on gynæcology.

In the chapter on prolapse the sections on anatomy and ætiology are very good, but there is a strange adherence to

[1] "Manual of Psychological Medicine: For Practitioners and Students", by A. F. Tredgold, M.D., F.R.C.P., F.R.S.E.; Second Edition; 1945. London: Baillière, Tindall and Cox. 8½" × 5½", pp. 319. Price: 18s. net.

[2] "Textbook of Gynæcology", by Wilfred Shaw, M.A., M.D. (Cantab.), F.R.C.S. (England), F.R.C.O.G.; Fourth Edition; 1945. London: J. and A. Churchill Limited. 8½" × 5½", pp. 644, with 271 illustrations and four coloured plates. Price: 24s.

old-fashioned methods in the author's advocacy of the pessary as an "excellent type of treatment". We do not agree with him that for the repair of prolapse of the pouch of Douglas abdominal intervention is necessary as well as vaginal, nor that Fothergill's operation is insufficient for complete procidentia.

The section dealing with ovarian tumours is not revised as fully as one could wish, and the author preserves a simple classification which today has little value. Fuller clinical details could be given of the well-known rarer types of ovarian tumour, and an up-to-date classification is required incorporating these tumours instead of having them attached like unrelated appendages. Some of the author's views on pathogenesis in this chapter are controversial.

The book is least satisfactory when it deals with infections. The chemotherapy of gonorrhœa is described, but no sulphonamide compounds of later discovery than sulphapyridine and sulphanilamide are included, and penicillin is not mentioned. *Lymphogranuloma inguinale* does not appear under that name, and the use of the Frei test in diagnosis and the modern views on its ætiology and treatment are omitted. Sepsis after abortion is said to be due to saprophytes, and its "modern treatment" is said to be "to give sulphapyridine or sulphanilamide in large doses". There is no mention of the essential concomitant of rational chemotherapy, that is, an accurate bacteriological diagnosis, nor of the fact that only a proportion of the organisms causing septic abortion are sensitive to sulphonamides. Insufficient appreciation of modern methods is also seen in his advice that for hæmatometra and hæmatosalpinx resulting from *atresia hymenalis* the correct treatment is removal of the uterus and Fallopian tubes, because "a fatal peritonitis is the usual result" of evacuation from below. With modern modes of bacteriological investigation, asepsis and chemotherapy such radical measures are not justified.

Despite its pleasant style, a number of excellent illustrations and the large amount of information it contains, this is a disappointing book. It is indeed open to question whether, at the present rate of additions to our knowledge, it is possible for one author, alone, to produce a really first-class textbook. The best results would appear to derive from a combination of authors and a wise and free use of references.

A COOKERY BOOK FOR DIABETICS.

ANOTHER instance of the practical assistance which diabetics have received from the Diabetic Association has appeared in the form of a "Cookery Book for Diabetics".[1] Following an introductory section concerned with "First Lessons in Food Values", illustrated by arrays of simple drawings, a series of useful hints on diabetic cooking combine common sense with correct anti-diabetic principles. For instance, the cook must not think that the diabetic bill of fare cannot be combined with the family cooking. Accuracy with the more concentrated carbohydrates is essential, and they must be eaten at the time and in the quantities prescribed by the doctor; recipes should be suited to the diabetic's particular appetite on the day in question, according to bulk or concentration. Then is set out a series of recipes for soups, egg dishes, fish, meat dishes, vegetables, sweets, savouries, salads, cakes, biscuits, drinks, sugarless preserves, pickles and breakfast dishes. These formulæ are numerous, varied and appetizing. Thus the diabetic has a choice of no less than twenty soups, nineteen meat dishes, fifteen fish dishes, and so on. The recipes are very complete, the caloric value and constitution in grammes of food elements for serving appear beside each one. There are many inspirations and attractions for non-diabetics among the suggestions made, and as Professor Mottram remarks in his foreword: "I am neither a diabetic nor a cook, but if anything could reconcile one to being either, it would be just this book." The volume concludes with a full list of up-to-date food values for reference purposes.

To a harassed British housewife, catering for a diabetic in her care, it is easy to see what a godsend such information would be in wartime days of points, coupons and rationing. The recipes are restricted to such foods as were available in the United Kingdom in the war years. Doubtless a later edition will provide an even more appetizing selection, but here there is already a great deal of invaluable information, with a hundred hints for the Australian diabetic or the clinic dietitian.

[1] "The Cookery Book for Diabetics", compiled by the Diabetic Association, with a foreword by Professor V. H. Mottram; 1945. London: H. K. Lewis and Company Limited. 8½" × 5½", pp. 82. Price: 4s. net.

CLEFT PALATE AND SPEECH.

ALTHOUGH Miss Morley, the author of "Cleft Palate and Speech", holds the position of speech therapist to the Newcastle General Hospital and to the Royal Victoria Infirmary and the Hospital for Sick Children, Newcastle-on-Tyne, she announces early in her book that the ultimate objective of cleft palate surgery is to obviate the need for speech training.[1] Meanwhile her purpose is to cement the association between surgeon and speech therapist by enabling each to understand the work of the other. This she may claim to have achieved.

About a third of her book is devoted to an outline story of the development of cleft palate surgery, preceded by a brief embryological and anatomical section. There is an interesting account of some of the earlier surgical attempts at closure, leading up to the modern view that operative success is to be measured by the ability to speak well, and not merely by appearances. The author describes in detail the pharyngoplasty and "4-flap" operation as performed by W. E. M. Wardill, with whom she has worked for over six years. For this operation it is claimed that "when practised on infants before about two years of age it enables them to learn to speak naturally and correctly without any speech training".

The middle third of the book is devoted to a description of the development of speech in normal and cleft palate children; and to an analysis of the various faults which combine to make up typical cleft palate speech. This is not too technical and can be readily understood.

The remaining third of the book is devoted to treatment. There are short discussions on conditions which influence the prognosis and on cooperation between patient and therapist; mention is made of the relative advantages of group work and individual treatment—obviously the fruit of the author's long experience.

A subsequent chapter gives detailed descriptions, with illustrations, of all the types of exercises used. This chapter could well be reprinted by itself as a most useful manual for any mother having to train her own child after a cleft palate operation, without the aid of a speech therapist. Altogether Miss Morley is to be congratulated on her little book.

A SYNOPSIS OF MEDICINE.

IN his eighth and latest edition of "A Synopsis of Medicine", Sir Henry Letheby Tidy adheres to his former well-known style of presentation of such principles of medicine as are of importance at the present time.[2] The book has been enlarged by the addition of about forty pages to the text.

Sulphonamide therapy is now adequately incorporated, the section on hæmolytic anæmias of the newborn with reference to the Rh factor has been rewritten, and that on the liver treatment of pernicious anæmia has been revised. The title "acute infective hepatitis" has been substituted for "catarrhal jaundice" in accordance with modern thought, and its description has been transferred from the section on diseases of the liver to that on specific infectious diseases. "Diseases of the reticulo-endothelial system" has been substituted as a title for the lipoidosis group of diseases. "Basophile adenoma of the pituitary" is replaced as a title by "Cushing's syndrome and adrenogenital syndrome" described together. Reference to the sarcoidoses and to vitamin *K* is included. Primary atypical pneumonia, acute encephalomyelitis, congenital cystic disease of the lung, and neoplasms of the bronchus are more fully described than previously, and a new article on sex hormones appears. The sections on various other subjects have been rewritten with advantage.

The author has elected to withhold reference to penicillin in the text, in view of the incomplete and changing knowledge available of this new therapeutic agent. A complete and easily consulted index is appended to the text. As with the previous editions, this book achieves its purpose of providing a ready means of revision of the salient features of the medical diseases, and therefore qualifies as a valuable addition to the library of student and practitioner. The production of such a volume in England during wartime merits a high tribute to the medical Press of that country.

[1] "Cleft Palate and Speech", by Muriel E. Morley, B.Sc., F.C.S.T.; 1945. Edinburgh: E. and S. Livingstone Limited. 7¼" × 4½", pp. 172, with many illustrations. Price: 7s. 6d. net.

[2] "A Synopsis of Medicine", by Sir Henry Letheby Tidy, K.B.E., M.A., M.D., B.Ch. (Oxon.), F.R.C.P. (London); Eighth Edition, revised and enlarged; 1945. London: John Wright and Sons, Limited. 7½" × 4½", pp. 1235. Price: 30s.

The Medical Journal of Australia

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All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

THE MEETING OF THE FEDERAL COUNCIL.

Of the many subjects discussed at the recent meeting of the Federal Council of the British Medical Association in Australia, the two most likely to arouse interest among medical practitioners are the *Pharmaceutical Benefits Act* and the government proposals in regard to hospital services. Other matters were of great importance from more than one point of view, but the two that have been mentioned were discussed in conference with representatives of the Commonwealth Government and had been for some time in the centre of the medico-political picture. Clearly if the Government could be brought to appreciate the point of view adopted by the Federal Council and to modify its intended action in certain respects, the Federal Council would be able to throw the weight of its influence and cooperation behind the Government's endeavour. That this has not been possible is to be regretted. Of the two matters the *Pharmaceutical Benefits Act* is of the more immediate importance. The discussions that have taken place in regard to this act at successive meetings of the Federal Council should be in the minds of members of the Branches; the different aspects of the act and its probable effect on the medical practitioner's relationship to his patient have been discussed also at Branch meetings and at sectional meetings of Branches in many of the States. From the account of the recent meeting which appears in the present issue—an account which has had to be curtailed as far as possible—it will be seen that the recent conference with the Government was the result of a letter from the President of the Council to the Minister for Health. This is also mentioned in the discussion at the meeting of the Federal Council reported in the issue of April 21, 1945. Here it was stated that the Federal Council had no wish to deprive the public of "free" medicine which the Government intended to provide, and it was made clear that the introduction of certain amendments would be followed by cooperation. The Government has never explained why it will not allow the practitioner under the provisions of the act to prescribe any drug that the patient may need, whether it is in the formulary or not. If the Government would allow the profession this freedom—and it is this freedom which the members of the profession desire to have—the practice of polypharmacy could easily be prevented by the establishment of a committee of practitioners endowed with the necessary executive powers. After all is said and done, the Federal Council has taken every possible step to secure the freedom of doctor and patient within the scope of the so-called free medicine enactment of the Government. Believing as it does in the rightness of its cause, the Council has no alternative and has refused cooperation with the Government; the members of the Branches have declared their willingness to follow the Federal Council's lead. The other matter about which no agreement was reached at the conference with the Government was the newly devised *Hospital Benefits Act*. The discussion in the report of the recent Federal Council meeting shows that conditions differ in the several States of the Commonwealth, and that opinions of members of these States on the retention of the honorary system are not uniform. There was at the meeting no difference of opinion, however, in regard to the contention that no medical practitioner should be expected to work for nothing for any person who could afford to pay for his treatment. If a practitioner wishes to do honorary work that is quite another matter, particularly if the person for whom the work is done is so placed that he cannot pay his way. The classification of patients into public and non-public (or paying and non-paying) groups suggested by the Federal Council is entirely reasonable and would be effective under present-day conditions, not only in the medical world, but in other spheres of activity. One danger that arises in the payment of staffs of large hospitals was not sufficiently emphasized in the Federal Council discussion. Hospitals are not only places where sick people go to be recovered of their sickness; they are also places where disease receives special study and where medical men are trained. This training covers not only the undergraduate student, but also the embryo specialist; it includes as well every member of the staff, for no man's voyage of discovery in medicine is ever complete. A large staff makes this kind of training a comparatively simple matter. The danger in the payment of a staff is that numbers will be so cut down that immediate treatment of the sick person will occupy the whole time of the staff members. These are early days in the life of the *Hospital Benefits Act*; it has yet to be accepted by the State governments, and these governments will have to see that the cooperation of their people is obtained and that machinery for its smooth working is provided. It may therefore be held that ideas such as those mentioned are premature, but this is far from correct. The more discussion there is on the subject, and the more widespread knowledge of the functions and scope of hospitals becomes, the more likely are the people, and members of the medical profession with them, to show wisdom in what they are prepared to accept from paternal governments; the more likely are governments, too, to display wisdom in their devising of paternal provisions.

The next matter to which attention should be drawn is the shortage of hospital accommodation and of personnel. In every place the same story is told nowadays of hospital wards lying empty, of hospitals being closed, because staff is not available. Sometimes it is nursing staff that is lacking; oftener it is domestic help that cannot be obtained. The Federal Council is probably right in its view that the

remedy lies in the release of more women from the services. A great many women will have to be released, however, before any effect will be noticed on hospital staffs. At the present time, when manpower officers direct women to hospitals for employment, the common experience is that the women do not go. Domestic work in a hospital is not easy, and it is said to lack "glamour", that indefinable characteristic supposed to be dear to the female heart. It is probably true that hospitals cannot pay the high wages that many unskilled women earn in all kinds of occupations during the progress of a war. The question of remuneration and of working conditions needs to be examined with great care. It may also be asked whether in the matter of release from the services a strict adherence to groupings should always be followed. If the usual method is observed, the last women to be released will be the young women who are best suited to such work as domestic work in hospitals. It would be better from the hospital point of view if so-called priority of discharge in groups was put on one side, and if the older age groups and groups of married women (if there are any) were asked whether they preferred to remain in their service positions. If they did choose to remain, women from the younger groups could then be discharged without having been given a choice. Such a method would, of course, cut across accepted "red tape" practice, but it would meet the needs of many civilian spheres of activity.

In regard to post-rubella deafness the Federal Council's decision did not go far enough. Clearly deaf mutes whose condition has followed maternal rubella while the child was *in utero*, are not the only deaf mutes to be educated. They certainly belong to a special age group of deaf mutes, but in this group maternal rubella is not the only cause of the condition. In every State of the Commonwealth some special measures are adopted for the education of deaf mutes; in some instances a school is controlled by the Department of Education; in others it is in the hands of a special organization that deals with deaf, dumb and blind children. The Federal Council will bring the whole matter before the National Health and Medical Research Council, and this body, with knowledge of what is already done in the States for deaf mutes, will be able to determine what financial help is required in any instance.

The discussion on the rehabilitation of service medical officers was important. Attention should be drawn to the statement that when partnerships are offered to ex-service officers the practices are rated sometimes at far too high a level, and that the sum asked often bears no relation to a man's ability to pay. It is easy to forget that when the parties to a partnership agreement are of compatible outlook and temperament, the incoming man is not the only one who stands to gain something. The senior partner, in addition to the purchase money that he receives, is able to have planned leisure hours that he may not have known for years; he has also a new companionship that should bring with it an infusion of youth and energy. These things are worth a great deal and cannot be stated in terms of pounds, shillings and pence. Of course, from the purely monetary point of view the practice of two men working in confidence and harmony is likely to grow. Closely allied to the general question of rehabilitation and the buying of practices and partnerships is the plight of men (generally in the cities) who have left practices to go abroad on service and who find on their return that no consulting rooms are to be had. This is a very real and embittering hardship. Under existing laws and regulations it is difficult to dispossess a tenant. In some instances the incommoding tenant is stated to be a government department of wartime growth. Doctors are not the only ex-service people who find themselves harassed in this way. It should not be difficult to make authorities concerned realize that the ex-service man is entitled to some relief in this matter.

Among the other matters dealt with at the Federal Council's meeting is the Federal Common Form of Agreement; everyone is agreed that finality should be reached in this question, which has been discussed for so many years with the friendly societies. In another sphere, that the conditions of service of medical officers in the Royal Australian Navy are so unsatisfactory is much to be regretted, and reference may have to be made to the subject at a later date. The Medical War Relief Fund soon to be established will be the subject of special comment on another occasion.

Current Comment.

RECENT WORK IN RUSSIA ON TYPHUS EXANTHEMATICUS.

THOUGH *typhus exanthematicus* has always been an endemic disease in Russia, it has never been widespread except in the years of war or famine. Two grave epidemics of *typhus exanthematicus* in Russia in recent years could be mentioned. One occurred during the Great War of 1914-1918, with its peak in the following year, 1919, and another in 1921-1922, after the famine in the districts along the Volga River. In the last thirty years anti-epidemic measures and a great deal of research have been carried out in Russia. As the result of both there was considerable decline in the incidence of *typhus exanthematicus*, and by 1940 only a few sporadic cases were registered here and there. With the outbreak of war between Germany and Russia in 1941 the number of cases increased considerably, and by the winter of 1941-1942 a widespread epidemic was registered in Central Russia. In these circumstances it is not surprising that the interest of the medical profession in Russia should centre again around typhus fever and that its prophylaxis should be discussed in Russian medical journals.

During the last four years many articles on the epidemiology and prophylaxis of *typhus exanthematicus* have appeared in the Soviet *Journal of Microbiology, Epidemiology and Immunobiology*. Attention will be drawn to some of the more important of these.

L. Gromashevsky and I. Stepanov (1941) report that after extensive investigation they have come to the conclusion that there is no evidence of the existence of a natural immunity to *typhus exanthematicus*; they are opposed to the theory of "latent-infection" or "virus-carriers".

N. I. Morozkin (1941), writing on the subject of "reinfection" in *typhus exanthematicus*, reports that though a few cases of reinfection can be proved, they are not numerous enough to warrant our attention. Clinically all such infections are mild. It is interesting to note that in recurrent cases the Weil-Felix test often produces a negative response, the reaction seldom occurring before the tenth or twelfth day, when the patient's temperature is usually returning to normal; if the result of the test is positive the titre is low, mostly not over 1 in 400.

M. K. Krontovskaya (1943) has carried out a great deal of work on the value of vaccinotherapy against *typhus exanthematicus*. She developed her own technique, and using lungs of white mice as a reservoir for Rickettsiæ she was able to prepare a vaccine which was capable of

producing antibodies and a stable immunity. It produced full immunity in 87% of immunized guinea-pigs, and antibodies could be demonstrated in the blood a week after the last inoculation.

S. P. Jak and E. V. Tarabukhina (1944) report that those vaccinated with Krontovskaya's typhus vaccine gave a positive response to the Weil-Felix test five days after the first vaccination (three vaccinations were carried out at five-day intervals). It was also noted by the authors that when serum of a vaccinated person was used for agglutination with typhus virus, the agglutination was granular ("O" type), and it was floccular ("H" type) when the serum of a typhus patient was used instead of that of a vaccinated person. It should be mentioned that white mice are extensively used in Russia for cultivation of Rickettsiæ and for preparation of typhus vaccine. In this connexion the work of A. P. Avtsyn and M. A. Seltsovskaya on the histopathology of rickettsial pneumonia of white mice (1944) is of interest. Using the method described by M. K. Castaneda in *The American Journal of Pathology*, Volume XV, 1939, the authors were invariably able to produce fatal bronchopneumonia when they infected white mice with typhus Rickettsiæ. The intensity of the development of Rickettsiæ in the lung tissue was proportional to the intensity of the pneumonia and reached its maximum during the stages of formation of foci of pneumonia (thirty-six to forty-two hours after inoculation) and of necrosis of the exudate (sixty-six to ninety hours). Rickettsiæ could be found in great number in the cells of alveolar epithelium, in bronchial epithelium and in the endothelium of capillaries.

The report of A. K. Shubladze, P. L. Soliterman and E. J. Sterngold (1944) on the use of serum against *typhus exanthematicus* is of particular interest. Rickettsiæ obtained from the lungs of white mice and treated with normal saline solution and 0·2% formalin solution were used for the immunization of horses. The serum of an immunized horse produced specific agglutination of Rickettsiæ. It also gave a Weil-Felix reaction with *Bacillus proteus* X19 in titre 1 in 640. It neutralized 100 infective doses of typhus virus in guinea-pigs. It prevented the development of typhus when introduced subcutaneously on the day of inoculation with Rickettsiæ; it shortened the time of illness and made the course mild if introduced after the fifth day. Clinical experiments with immunized horse serum were carried out on human beings in Tashkent by Professor Katzenovich and proved to be of value.

On the question of early diagnosis of *typhus exanthematicus* an interesting report has been made by A. I. Drobyshevskaya (1943), who advocates the use of a complement-fixation test as an effective and reliable method of early diagnosis. The reaction between antiserum of a convalescent and the serum of a patient is specific for *typhus exanthematicus*. The antigen can be demonstrated in the serum during the incubation period when the Weil-Felix test still fails to produce a reaction. The temperature at which the test should be carried out is of an importance. It has been found that at room temperature the serum will fix complement only in a dilution up to 1 in 300; it will fix complement in a dilution up to 1 in 1,200 at 4° C. The best results were obtained at temperatures between 0° and 4° C., and when the contact between antigen and antibody was allowed to last for eighteen hours.

THE PRE-SCHOOL CHILD IN AUSTRALIA.

AT the first session of the National Health and Medical Research Council, held at Hobart on February 1, 1937, a resolution was passed drawing the attention of governments in Australia to "serious neglect in adequate supervision of the bodily development of children before and during school age". The council recommended that measures should be taken to ensure "regular and complete supervision of bodily health during infancy and childhood to the age of sixteen years". At the second session of the council, in June, 1937, this resolution was reaffirmed. At the third session, in November, 1937, the council was able to adopt a resolution approving of the Commonwealth Government's newly stated policy of working in conjunction with the States to evolve a better system of care of children between the infant and school stages. The principles enunciated in Dr. Vera Scantlebury Brown's memorandum were commended; these principles were stated as follows:

(1) The extension of infant welfare activities to include attention to the pre-school child.
(2) A model nursery-kindergarten demonstration centre.
(3) Research into the child's needs (especially nutritional) for full development of health.

The Commonwealth Government had already made available the sum of £100,000 for "public health projects, especially in relation to the health of women and children". In April, 1938, the views of the Commonwealth Government were communicated by the Prime Minister to the Premier of each State; a demonstration centre, under the direction of the Commonwealth Department of Health, was to be set up in each capital city for the testing and demonstration of methods for the care and instruction of young children and the study of problems of physical growth, nutrition and development. A research centre was also to be established at Canberra for the investigation of laboratory problems indicated by the demonstration centres. The cooperation of existing kindergarten associations was to be sought. The need for better care of the young child had been for some time urged by other agencies, and approval of the final official scheme was undoubtedly expedited by the support of Her Excellency the Lady Gowrie. It may be recorded here that the six centres ultimately established, one in every capital city, were each named "The Lady Gowrie Child Centre". A federal body was formed, which included the kindergarten unions of all the States, and chose as its title "The Australian Association for Pre-School Child Development"; this body became the agent through which the Department of Health carried out its programme. Incidentally, it should be noted that the work of the Advisory Council on Nutrition, which had been established by the Commonwealth Government in February, 1936, had led Dr. F. W. Clements, in this body's final report in July, 1938, to affirm that attendance at kindergartens had undoubtedly had a favourable influence on the nutrition of pre-school children of all age groups.

The Commonwealth Department of Health has just issued a book entitled "Pre-School Centres in Australia: The Lady Gowrie Child Centres", by Dr. J. H. L. Cumpston, who was Director-General of Health of the Commonwealth during the first five years of these centres, and Miss Christine Heinig, Ph.B., M.A., Federal Education Officer of the Australian Association for Pre-School Child Development.[1] This book is a most valuable and comprehensive record of the work done at the centres during these early years. It is, in effect, a "handbook on nursery kindergarten design, equipment and programme", full of information based on experience and of helpful suggestions for the future expansion of the work. Each of the six centres is described in detail; ground plans are given, and the advantages and disadvantages attendant on unavoidable differences in design and layout are discussed. It is stressed that the child centre is much more than a place for the care of the young child; the ideal is eventually to make it part of a community centre, where the citizens of the district may meet together for social and cultural pursuits. At the present time the centres have helped many parents to a better understanding of how to manage their children materially and psychologically. Everywhere it is emphasized that the child is a whole being, a combination of mind and body, both of which must develop, and the keynote of management is "guide, not punish". This publication will be read with interest and profit by all who have to do with kindergarten work.

[1] "Pre-School Centres in Australia; Building, Equipment and Programme; The Lady Gowrie Child Centres", by J. H. L. Cumpston, M.D., and Christine M. Heinig, Ph.B., M.A.; 1945. Canberra: The Commonwealth Department of Health. 11" × 8", pp. 244, with many illustrations.

Abstracts from Medical Literature.

PÆDIATRICS.

The Treatment of Poliomyelitis.

J. ALBERT KEY (*The Journal of Pediatrics*, March, 1945) considers what symptoms of poliomyelitis deserve treatment and what the results of therapy are likely to be. The disease is self-limited, and if deformities are prevented, the end-result is determined largely by the damage done to the motor cells during the acute febrile stage. Many patients recover completely without treatment, and others remain extensively paralysed in spite of the best treatment. No known treatment affects the degree or extent of the initial paralysis, but it is possible to ameliorate the effects of the disease. In the acute febrile stage the treatment is general medical care *plus* protection of the patient from irritation. If the respiratory function is affected, efforts must be made to save the patient's life. In the subacute stage, rest and immobilization dominate the treatment. The author relieves the patient's pain, protects paralysed muscles from stretching, prevents early deformities due to contraction of painful muscles, and gives the injured nerve cells the best possible chance to recover. In the convalescent stage he protects and restores the maximum of power to the weakened muscles, stretches the contracted muscles and restores normal movements to the parts and trains the patient to use his weak extremities. In the chronic stage he tries to prevent or minimize late deformities and to increase function by braces and surgery.

Abdominal Pain in Children due to Allergy.

BRET RATNER (*The Journal of the American Medical Association*, March 24, 1945) points out that abdominal pain in children at times presents difficulties in diagnosis. Every year children with obscure abdominal pain are admitted to hospital wards and are subjected to many tests to exclude such conditions as tuberculosis of the abdominal lymph nodes, various anatomical defects of the thyreoid gland and intestinal tract, recurrent appendicitis, pyelitis, kidney stones and so on. Definite causes may be found as the result of such investigations, but on occasion the child is sent home with the condition undiagnosed. The author's thesis is that in some of these cases the abdominal pain may be due to food allergy. His discussion is concerned solely with the evaluation of abdominal pain due to food allergy. He arrives at the following conclusions: Abdominal pain in children may be allergic in nature. Such pain may at times present difficulty in diagnosis. If no other real cause is ascertained, allergy should be suspected. In evaluation of the allergic phenomenon with respect to abdominal pain, the following pathogenesis must be borne in mind: (*a*) All the native albumin fraction of protein foods is not always readily broken down by the intestinal enzymes and part may pass unchanged into the blood stream and produce an allergic reaction. (*b*) Sensitization must previously have been established before contact with the offending protein will result in an allergic reaction. (*c*) Sensitization may be acquired in various ways. (*d*) The surface as well as the deeper structures of the wall of the digestive tract may be affected. (*e*) Any part of the digestive tract, from the mouth to the rectum, may be affected. Allergic abdominal pains may be initiated by (*a*) spasm of the gastro-intestinal smooth muscle, (*b*) weal formation in the gastro-intestinal wall, (*c*) spasm of the small vessels of the gastro-intestinal walls, or (*d*) a combination of these factors. As a result of the allergic response, signs of appendicitis or intussusception may be simulated in all essentials. Although the allergic reaction is reversible, if the disturbed physiology is too pronounced or prolonged, the harmless allergic reaction may actually be converted into a typical acute appendiceal involvement or intussusception and prompt surgical treatment should be adopted. Pure allergy of the gastro-intestinal tract, that is, allergy uncomplicated by a concomitant eczema, urticaria or asthma, as a rule does not produce the diagnostically valuable reaction to the protein skin test. The diagnosis must at times rest on careful historical data relative to the ingestion of certain foods. Diagnostic aid is given by the prompt relief from pain following the subcutaneous injection of epinephrine, or the oral administration of atropine. Of further diagnostic value are X-ray findings when a test meal of the offending food is given: (*a*) pylorospasm, (*b*) delayed emptying of the stomach, (*c*) hypertonicity and hyperperistalsis of the intestine. Treatment from the long-range point of view consists in discovery of the offending food or foods, the elimination of such food or foods, or the use of incriminating foods in "allergenically denatured" form and the building up of a tolerance for the offending foods.

The Prevention of Rheumatic Recurrences by the Use of Sulphonamides.

ANN G. KUTTNER (*The Journal of Pediatrics*, March, 1945) states that during the past eight years the value of the daily prophylactic administration of sulphanilamide to known rheumatic subjects in the inactive stage of the disease has been studied in eight different clinics or convalescent homes in various parts of the United States. One of the eight clinics discontinued the study before arriving at any definite conclusions because numerous toxic reactions with one death were encountered. The reports from the other seven clinics all agree that this type of prophylaxis is effective in preventing rheumatic subjects from contracting streptococcal upper respiratory infections and that individuals so protected escaped rheumatic relapses. Most of these studies were conducted on ambulatory patients. The author's observations were made in a convalescent home situated in Westchester County, New York, where the children who served as controls and those receiving prophylactic sulphanilamide lived under identical conditions and where careful bacteriological and serological determinations could be made. The significant findings may be briefly summarized as follows. During two successive winters the 108 children in the institution, ranging in age from seven to fifteen years, were divided into two groups matched as closely as possible in regard to age, sex, number and severity of previous rheumatic attacks and cardiac lesions. All the patients were in the inactive stage of the disease. One group received daily prophylactic doses of sulphanilamide from October until June. An average blood level of from 1·5 to 2·0 milligrammes *per centum* was maintained. The children in the other group served as controls. During each of the two winters an outbreak of streptococcal upper respiratory infections occurred among the children in the control group. In 1940-1941, thirty of the fifty-four children serving as controls contracted streptococcal pharyngitis due to Group A streptococcus, type 15. Following a latent period, fourteen of these thirty patients developed definite rheumatic recurrences. In 1941-1942, eighteen of the fifty children in the control group contracted pharyngitis due to Group A streptococcus, type 36. Following a latent period, nine of these eighteen patients developed definite rheumatic manifestations. In 1940-1941, only one child of the fifty-four receiving sulphanilamide contracted pharyngitis due to streptococcus type 15 and she escaped rheumatic sequelæ. In 1941-1942, one boy of the fifty-four receiving sulphanilamide contracted pharyngitis due to streptococcus type 36. Following a latent period he developed mild rheumatic manifestations. Thus a striking difference between the two groups of children was observed both in the incidence of streptococcal upper respiratory infections and in rheumatic recurrences. Twenty-three children, who remained in the institution during both years, showed no signs of hypersensitivity when sulphanilamide was resumed after a lapse of four and a half months. There was no significant difference in weight gain between the children who received sulphanilamide and those who served as controls. During the present war sulphonamide prophylaxis has been widely used in the American Armed Forces. In controlled studies both among Navy personnel and among members of the Army Air Force, the prophylactic administration of sulphadiazine has resulted in a striking reduction in the incidence of streptococcal upper respiratory infections, and following a lag of several weeks a similar reduction in the incidence of rheumatic fever. These investigations have therefore confirmed the findings obtained in civilian practice. The fact that sulphonamide prophylaxis greatly reduces the incidence of streptococcal upper respiratory infections and thus protects susceptible individuals from developing rheumatic manifestations, can no longer be doubted.

Hospital Morbidity and Mortality of Infantile Eczema.

STEPHEN EPSTEIN (*The Journal of Pediatrics*, June, 1945) reports a series of one hundred cases of infantile eczema with a discussion on hospital morbidity and mortality. Out of the hundred children, twenty-one suffered from twenty-three complications, a morbidity rate of 23%. A breakdown of the

statistics showed that all but one of the complications occurred among the seventy-eight atopic children and only one among the twenty-two with non-atopic eczema. Nearly all complications were respiratory infections or gastro-intestinal disturbances. They are explained as exacerbations of concomitant respiratory or gastro-intestinal allergy. The statistics presented demonstrate that with the advent of sulphonamides and under proper nursing care, there need not be fear of death among infants admitted to hospital with eczema. This conclusion should not lead to indiscriminate hospitalization of babies with infantile eczema, but it should eliminate fear when hospitalization becomes mandatory on account of the severity of the eczema or for other reasons. The so-called "sudden death from eczema" is discussed. A hypothesis of toxic effects from phenol-like tar products, in combination with interference with skin respiration and disturbance of the autonomous nervous system, is suggested to explain some instances of this phenomenon. A reminder is given about the toxicity of coal tar, and it is suggested that tar preparations should not be used over surfaces that are too extensive.

ORTHOPÆDIC SURGERY.

Cervical-Axial Osteotomy of the Femur.

GUY W. LEADBITTER (*The Journal of Bone and Joint Surgery*, October, 1944) describes a new operation for the treatment of non-union in fractures of the femoral neck. The osteotomy is accomplished through an anterior incision. The joint capsule is opened with a cruciate or semilunar incision. If comminuted or projecting fragments of bone are present at the lower portion of the head, they are removed. An osteotomy in the long axis of the neck of the femur at the junction of its middle and upper thirds is completed through the neck of the femur and the base of the greater trochanter in the same axial line. The upper fragment is allowed to remain free and the osteotomized neck and femoral shaft are then displaced beneath the head to a point within the lower acetabulum rim. The head usually rotates to the platform of the neck beneath it. A plaster spica is applied for eight weeks. Eight patients have been operated upon and the results have been observed over a period of at least one year. Every patient has a functioning and weight-bearing hip. Solid union is present in six cases. The author states that the simplicity of the operation is equal to that of the McMurray osteotomy; it has the added advantage of being accomplished under full vision.

The Use of Aluminium Acetate in the Treatment of Malacic Diseases of Bone.

RALPH K. GHORMLEY AND JOHN J. HINCHLEY (*The Journal of Bone and Joint Surgery*, October, 1944) discuss the treatment of malacic diseases of bone and the theoretical basis of Heifet's use of aluminium salts, namely, to reduce the intake of phosphorus and "thus remove the stimulus to the overproduction of parathormone". An amount of aluminium acetate with a phosphate-combining power equivalent to 150 to 220 milligrammes of calcium was given daily by the author to a series of patients. At least one pint of milk a day was prescribed in order to give patients a source of calcium and vitamin *D*. The patients treated suffered from senile osteoporosis, Paget's disease, *osteitis fibrosa* and *osteogenesis imperfecta*. Of ten patients who were diagnosed as suffering from osteoporosis and who had followed the treatment for six months or more, eight manifested improvement and two were not benefited. There was no X-ray evidence of improvement. All of the eight patients diagnosed as suffering from Paget's disease who followed out the programme for six months or more showed improvement. The evidence of improvement was on the basis of symptomatic relief. There was no X-ray evidence of improvement. The condition of three patients with *osteitis fibrosa* who followed the treatment was improved. Another patient stopped the treatment in two months on account of gastro-intestinal upset. His condition was not improved. In two cases the improvement was considerable and was demonstrated by X-ray examination. One patient suffering from *osteogenesis imperfecta* was treated. He reported that he felt much better. The authors state that it is not known how permanent the effects produced by aluminium acetate may be, or how complete the restoration of the bone.

Causes of Failure in the Treatment of Congenital Dislocation of the Hip.

IGNACIO PONSETI (*The Journal of Bone and Joint Surgery*, October, 1944) has studied the results obtained in the treatment of 129 patients suffering from congenital dislocation of the hip. Of the 173 hips studied, 103 were treated by closed reduction alone; 20 required open reduction; 45 necessitated shelf operations, one patient was treated by means of an abduction splint; and four had subtrochanteric osteotomy. The cases were divided into the following three groups: (*a*) Pre-natal dislocations in which the dislocation is present at birth. (*b*) Post-natal dislocations, in which the patient presents a pre-dislocation at birth, which slowly progresses during the first year of life until it becomes a well-established dislocation when the patient begins to walk. (*c*) Doubtful cases in which it was impossible to determine how and when the dislocation took place. Of all the cases, 9·3% were of the pre-natal type. In these patients the head of the femur is usually stable in the secondary acetabulum, which develops above the primary acetabulum and has no relation to it. Most of the pre-natal dislocations were of the anterior variety. Treatment in these cases generally resulted in failure. The author states that if these dislocations are left alone, a secondary acetabulum will develop which will provide a good functional result. The percentage classified as post-natal dislocations was 68·3. The patients in this group are born with dysplastic hips. When dislocation occurs, X-ray examination shows what the author calls the bilabiation of the acetabular roof. The author states that 22·5% of the dislocations in this series could not be placed in either the pre-natal or the post-natal group. It is characteristic of this group of doubtful cases that the primary acetabulum is fairly well developed, as in cases of post-natal dislocation. Bilabiation is absent. The secondary acetabulum is usually well formed and is completely separated from the primary acetabulum. This seems to indicate that the dislocation did not take place by progressive upward sliding of the femoral head as occurs in the post-natal dislocation group. In the post-natal dislocation group good anatomical results were obtained in 38·4% of cases. In the group of doubtful cases good anatomical results were obtained in 23·3% of cases. In the whole series well-developed hip joints were secured in 7% of cases; there were no symptoms in 30% of cases at the end of treatment. The main causes of failure were found to be due to epiphysitis of the femoral head, to the tendency toward subluxation which occurs at the beginning of the walking exercises, and to the osteosclerosis of the acetabular roof. To improve the treatment, the author proposes to limit the period of immobilization in a plaster cast to from five to six months, this to be followed by a prolonged period of functional after-treatment, controlled with an abduction bar. The abduction bar was devised with the object of avoiding adduction and outward rotation of the hips, but allowing free motion in other directions.

March Fracture.

ABRAHAM BERNSTEIN AND JOSEPH R. STONE (*The Journal of Bone and Joint Surgery*, October, 1944) draw certain conclusions from this series of 307 patients suffering from march fracture and seen in nine months at Camp Walters, Texas. Prior to the introduction of "speed hikes" and prolonged marches in the curriculum of basic training, march fractures were rare. This pathological condition occurred in soldiers irrespective of age, height, weight and general body build. No usual or unusual deformities of the feet were associated with this condition. One or more of the metatarsals may be involved at the same time, or at different times during the training cycle. There is no relation between pre-induction occupation and the development of a march fracture. This condition does occur in the coloured soldier, although not nearly so frequently as in the white soldier. After six to eight weeks of the treatment described in this paper, the soldier is able to perform his duties as well as the man who never had a march fracture. The authors state that the treatment adopted is not original, but has been used previously for fractures of the toes and various other conditions of the feet. A steel bar, one-half of an inch wide, one-eighth of an inch thick and six inches long, is countersunk on the underside or non-weight bearing surface of the sole and is held in position by four rivets. This steel bar, which eliminates motion at the metatarso-phalangeal joints, is kept in position for four to five weeks, at which time the fracture has solidly united. Most patients continue with their full training and are rarely admitted to hospital.

British Medical Association News.

MEETING OF THE FEDERAL COUNCIL.

A MEETING of the Federal Council of the British Medical Association in Australia was held at the Medical Society Hall, Albert Street, East Melbourne, on October 15, 16, 17 and 18, 1945, SIR HENRY NEWLAND, the President, in the chair.[1]

Representatives.

The following representatives of the Branches were present:

New South Wales: Dr. A. J. Collins, D.S.O., M.C., and Dr. W. F. Simmons.

Queensland: Dr. A. E. Lee and Dr. D. Gifford Croll, C.B.E. (as substitute for Dr. T. A. Price).

South Australia: Sir Henry Newland, C.B.E., D.S.O., and Dr. R. J. Verco.

Tasmania: Dr. C. Craig and Dr. J. S. Reid.

Victoria: Dr. F. L. Davies and Dr. H. C. Colville.

Western Australia: Dr. N. M. Cuthbert and Dr. F. W. Carter.

Minutes.

The minutes of the previous meeting of the Federal Council of March 12, 13, 14 and 15, 1945, which had been circulated amongst members, were taken as read and signed as correct.

Annual Report of the Federal Council.

The annual report of the Federal Council for the year ended June 30, 1945, was received.

Finance.

Dr. W. F. Simmons presented the financial statement and balance sheet as at June 30, 1945. The statement, which included the Federal Council account and the Australasian Medical Congress (British Medical Association) Fund Account, was received and adopted.

Dr. Simmons pointed out that the capitation rate for the ensuing year had to be fixed. He thought that a sum of 10s. per member would probably be sufficient. He suggested that certain charges should always be made to the Federal Council. Up to the present time the Federal Council had paid no rent for its registered office in the British Medical Association House, 135, Macquarie Street, Sydney, which was owned by the New South Wales Branch. The New South Wales Branch paid rent for its own offices, although, of course, it was only a book entry. The New South Wales Branch also paid for all the trunk line telephone calls made on behalf of the Federal Council, and it made no charge at all for the time given by junior clerks in the preparing and dispatching of reports, circular letters and other matters connected with the agenda of Federal Council meetings. It was agreed that adjustments should be made so that the Federal Council would pay for work done on its behalf. Dr. Simmons formally moved that the *per capita* payment to the Federal Council for the coming year should be 10s. This motion was seconded by Dr. A. E. Lee. The motion was carried.

A letter was received from the Victorian Branch suggesting that in view of the increasing expenditure of the Federal Council, only one representative from each Branch should attend the meetings of the Council. The General Secretary reported that this had been referred to the Branches, and that they were all opposed to it. Dr. H. C. Colville was allowed to withdraw the notice of motion of the Victorian Branch.

Dr. Simmons presented a statement in connexion with the Federal National Health Insurance Emergency Account. The statement was received.

Medical Officers' Relief Fund (Federal).

Dr. W. F. Simmons presented the report and balance sheet of the trustees of the Medical Officers' Relief Fund (Federal) for the year ended June 30, 1944. He pointed out that most of the debtors were meeting their commitments and that others were paying interest. During the year one debtor had completely paid off what he owed to the fund and others had reduced their indebtedness. On the whole he thought that the fund had done very good work and the balance sheet was satisfactory. The fund had also been instrumental in helping to educate the children of deceased medical officers from the 1914-1918 war. One boy had just graduated at the university and another was about to complete his course. The report and statement were adopted.

The Deaths of Sir James Barrett and Dr. M. Kasner Moss.

Reference was made by the President to the deaths of Sir James Barrett, a former president of the British Medical Association, and of Dr. M. Kasner Moss, of Western Australia, who had been a member of the Contract Practice Committee of the Federal Council. Letters of condolence had been sent to the relatives in each instance.

Retirement of Dr. J. H. L. Cumpston.

The General Secretary read some correspondence which had passed between Dr. J. H. L. Cumpston and the President. Dr. Cumpston, on his retirement, had written to the President, acknowledging the courtesy that had always been extended to him by the President in their official relationships. The President had replied, and in the course of his letter referred to the distinguished character of the services that Dr. Cumpston had rendered to the nation. He also referred to Dr. Cumpston's directorship of the Civilian Emergency Medical Services. Dr. Cumpston's earnest consideration for the practising profession had brought about harmony, and it ensured the success of the service.

Decorations Received by Medical Officers of the Armed Forces.

The General Secretary reported that on behalf of the President and members of the Federal Council he had offered congratulations to the following members of the Australian armed forces who had been honoured by His Majesty the King: Colonel A. H. Green, C.B.E.; Colonel J. Leah, C.B.E.; Colonel J. C. Belisario, C.B.E.; Colonel F. H. Beare, C.B.E.; Lieutenant-Colonel A. W. Robertson, O.B.E.; Surgeon Commander J. M. Flattery, O.B.E.; Major P. A. Tomlinson, O.B.E.; Colonel A. J. Murray, O.B.E.; Colonel R. H. MacDonald, O.B.E.; Captain H. Glynn Connolly, M.C.; Captain J. C. Aitken, M.C.

A Hospital Appointment in Queensland.

A letter was received from a member of the Queensland Branch in regard to the terms of his appointment as a resident medical officer at a Queensland hospital. The General Secretary reported that the letter had been referred to the Queensland Branch, as the matter was one for State action.

Pharmaceutical Benefits Act, 1944.

The General Secretary referred to the conference which was to be held with the Minister for Health on the following day in connexion with the *Pharmaceutical Benefits Act*, 1944. He referred to a letter which had been sent by the President to the Minister after the last meeting of the Federal Council (see THE MEDICAL JOURNAL OF AUSTRALIA, April 21, 1945, page 411). In particular he drew attention to the last paragraph of the letter, in which the Federal Council asked the Government to reconsider the objectionable features of the act and stated that it would be prepared to cooperate with the Government in any steps which might be taken to rectify them. He also read a letter from Dr. F. McCallum, Director-General of Health of the Commonwealth, who stated that the Minister had approved of the holding of a conference with the Federal Council on October 16, 1945. The purpose of the conference was "to discuss provisions of the Commonwealth Pharmaceutical Formulary and in general to confer with delegates on all aspects of the administration of the *Pharmaceutical Benefits Act*". A general discussion then took place on the attitude which should be adopted by the Council in its conference with the Minister. Dr. H. C. Colville pointed out that the present policy of the Federal Council was clear. He read the four main objections of the Federal Council to the act, which had been stated at the meeting of the Federal Council in September, 1944 (see THE MEDICAL JOURNAL OF AUSTRALIA, October 28, 1944, page 467). In Dr. Colville's opinion the only possible attitude was to stick to the four points of objection, and he thought that if the Minister refused to take action in regard to them, the conference should end. In reply to a question from Dr. C. Craig as to whether equal stress should be laid on the four objections, Dr. Colville replied in the affirmative. Dr. A. E. Lee referred to some correspondence that had taken place in regard to the rising cost of medicines, and he had

[1] The chair was taken by Dr. H. C. Colville, the Vice-President, at one stage of the meeting during the temporary absence of the President.

stress on the view that the medical profession would be prepared to police the question of over-prescribing. Dr. A. J. Collins thought that if the Government knew what degree of cooperation the profession was prepared to give if its objections were met, the Government might be prepared to reconsider its attitude. It was finally resolved that the Federal Council was prepared to meet the Minister for Health for the purpose of discussing the four points of objection to the *Pharmaceutical Benefits Act* laid down by the Council, and also of indicating the cooperation which the Council was prepared to offer if the Council's objections to the act were met. It was further decided that if the Minister for Health refused after discussion to meet the objections of the Council to the act, the Council should refuse to discuss any other aspects of the act and should inform the Minister that its policy of non-cooperation would continue. It was also decided that if the Government was prepared to meet the objections of the Federal Council to the act, the Government should be asked to provide for the constitution of a committee of reference, to deal with: (*a*) new discoveries; (*b*) proprietary preparations; (*c*) the use of drugs not included in the British Pharmacopœia and the British Pharmaceutical Codex; (*d*) the control of advertising by supplying privileged scientific information to the Press. The Federal Council also determined that if the Government decided to meet the Council's objections to the act, it should be informed that the Council wished to police the free prescribing allowed to the profession. It proposed in cooperation with the State councils to appoint a committee or committees to control prescribing under the act, and would ask the Government to provide these committees with the necessary legal power.

The conference was held on October 16, 1945, and no agreement was reached with the Government on any of the points.

The Council then discussed the attitude that should be adopted by individual practitioners. The President said that any action taken by the Branches should be uniform. Dr. H. C. Colville said that some simple method should be devised. Successful resistance depended upon the action of individual doctors. He thought that when members received the stationery in connexion with the act, it should be sent to the office of each member's Branch, and that he should retain a formulary. Dr. W. F. Simmons explained the attitude proposed by the New South Wales Branch, which was to return the forms and the formularies to the secretary of the Branch concerned. The Council also had before it copies of a notice which had been issued to members of the New South Wales Branch for display in their waiting rooms, stating the objections of the profession to the act. It was eventually resolved that members of the Association should be advised to return the forms and the Commonwealth Pharmaceutical Formulary to the secretary of the Branch in their State, and to continue to prescribe for patients as in the past. It was also decided that every member of the profession in Australia should be supplied with two copies of the "Notice to Patients" sent by the New South Wales Branch to its members.

Validity of the Act.

The General Secretary reported that a High Court writ had been served on the Commonwealth Government by the Attorney-General of Victoria on relation of the Medical Society of Victoria, challenging the constitutional validity of the act.

Australasian Medical Publishing Company, Limited.

The General Secretary announced that the Australasian Medical Publishing Company, Limited, had published a list of the members of the Association in Australia, and he read the correspondence with the Branches and with the members of the Federal Council advising them of the stoppage of work in the printing industry in New South Wales owing to an industrial dispute. As a result the publication of THE MEDICAL JOURNAL OF AUSTRALIA was suspended.

The General Secretary also announced that he had received a letter from the secretary of the company, stating that the directors had resolved to allow a rebate to the Branches of 10s. in respect of each member who had totally relinquished civil practice at December 31, 1945, for continuous full-time service in His Majesty's Forces. It was resolved that the company should be thanked for its action.

Publicity.

Dr. A. J. Collins and Dr. W. F. Simmons were reappointed members of the Publicity Committee with powers of cooption.

Organization of the Profession.

The General Secretary reported that he had visited Queensland on behalf of the Federal Council from July 12, to 21, 1945, and had addressed meetings in several centres. He discussed some of these meetings in detail. The report was received.

The General Secretary also reported that copies of the constitution of the Medical Association of South Africa and of the Canadian Medical Association had been sent to the Branches and to members of the Federal Council. He also laid on the table a copy of the "Constructive Programme for Medical Care" adopted by the Council of Medical Service and Public Relations and the Board of Trustees of the American Medical Association.

Federal Organization Fund.

The General Secretary reported on the sums that had been paid by the Branches to the Federal Organization Fund. The report was received.

Federal Medical War Relief Fund.

Correspondence was received from the Branches, setting out the names of those who had been appointed in the several States to the local committees of management of the Federal Medical War Relief Fund.

A copy of the deed of trust drawn up by the Federal Council's solicitors was also presented. Subject to one verbal alteration, to the need for which attention was drawn by Dr. F. W. Carter, it was resolved that the seal of the Federal Council should be affixed to the deed. It was noted that letters of appeal to the members of the medical profession in Australia were prepared for distribution.

Special Groups.

The Australian Association of Physical Medicine (British Medical Association).

The General Secretary reported that the inaugural meeting of the special group known as the Australian Association of Physical Medicine (British Medical Association), to the formation of which approval had been given at a previous meeting of the Federal Council, had been held on July 20, 1945. The constitution and by-laws, which had been adopted, were received by the Federal Council.

Australian Society of Anæsthetists.

An application was read from the Australian Society of Anæsthetists for admission as a special group of the Association. In the application, which was signed by Dr. Geoffrey Kaye, the secretary, it was stated that the society had 31 members in civil practice and 11 in the armed forces; 11 members were in suspense. Admission of the society to the status of a special group was approved.

Medical Registration.

A communication was received from the Director-General of the Commonwealth Department of Information regarding the qualifications necessary for an American practitioner who wished to practise in Australia. The reply had been sent that registration was a matter for the States, each of which had its own act dealing with registration. The qualifications necessary for registration in each State were stated.

The General Secretary reported that he had written to the Branches regarding the reciprocal arrangements for registration with other countries. It appeared that New South Wales was the only State which had any reciprocal arrangements with any other country. These arrangements held in regard to the Province of Manitoba in Canada.

The General Secretary reported that he had received inquiries from the Parent Association in regard to the opportunities available in the Dominions for the admission to practice of doctors from Great Britain. It was pointed out that while Australia had some hundreds of medical officers in the armed forces who had to be repatriated, the members of the Association in England should be aware of the opportunities which existed in the Commonwealth. The Federal Council agreed that all possible information should be collected and sent to the secretary of the Parent Body.

Alien Medical Practitioners.

Reference was made to the cancellation by the Commonwealth Alien Doctors' Board of a licence that had been granted to a foreign practitioner, and to the subsequent restoration of the practitioner's name to the register after he had applied to the Minister for Health. Correspondence

with one of the Branch Councils and with the Federal Council representatives on the Central Medical Coordination Committee was read, and it was pointed out that the Minister had power to order such restoration.

A letter was read from the Victorian Branch, asking that the question of the future of licensed aliens on expiration of their licences should be referred to the Federal Council, in order that the Council might ascertain the opinions of the Branches. The General Secretary reported that the New South Wales Branch was of the opinion that the Federal Council should recommend opposition to the registration of these practitioners unless there was a reciprocity between the State and the country of the practitioner's origin, so that Australian practitioners might be registered in that country under conditions no more onerous than those imposed by the Australian State. The Western Australian Branch thought that UNRRA should be informed, and that these licensed alien practitioners should be returned to their own countries. The Tasmanian Branch thought that the licensees should not be allowed to continue in practice until all Australian service medical officers had been repatriated and established in practice. The South Australian Branch thought that provision should be made under State medical acts for the registration of these practitioners if reports from the medical coordination committees regarding them were satisfactory. The Queensland Branch thought that these practitioners should not be registered on terms more advantageous than those which applied to similar persons prior to 1939, but that their services under licence should be considered in relation to the necessary experience which would be required for registration. The Branch further thought that certificates of satisfactory conduct under licence should be furnished by State medical coordination committees and other authorities under whom the licensed practitioners had served. They should then be required to pass an examination in an Australian university prior to registration. Dr. F. W. Carter pointed out that in Western Australia some of these men were practising in areas to which medical officers were returning after war service. After discussion it was resolved on the motion of Dr. W. F. Simmons, seconded by Dr. A. J. Collins, that the Federal Council should recommend to all Branches that they oppose the registration of alien doctors whose licences expired, unless their country of origin provided registration of graduates of the States concerned upon conditions no more onerous than those existing in such State.

Medical Coordination Committees.

At the previous meeting of the Federal Council it was resolved that, in view of the fact that the Central Medical Coordination Committee was now under the control of the Department of Health, the Government should be asked to remove the ban of secrecy imposed upon members of the committee except in special circumstances and at the discretion of the chairman. The General Secretary stated that this resolution had been conveyed to the Minister, and that he had replied stating that he had approved of a system whereby all minutes of the committee would show by asterisks any item which the chairman considered had a clear relationship to a security aspect, or which, in his opinion, it would not be public policy to release. Subject to these conditions the proceedings of the Central Medical Coordination Committee would no longer be regarded as secret.

The Federal Council then discussed the future of the medical coordination committees. It had before it a communication signed by the secretary of the Central Medical Coordination Committee, advising that the Director-General of Health had at a meeting in August reported on the future of the medical coordination committees. He stated that the Government was anxious to relinquish as many controls as possible. Notwithstanding the recommendations of the Central Medical Coordination Committee, the Prime Minister had written to the premier in each State, suggesting that relaxation of control of the medical profession could best be achieved by the setting up in each State of an agency for control within that State. The Prime Minister had indicated that the Commonwealth Government would be prepared to delegate these powers to the State. In order to maintain cohesion beyond the State agencies and the Commonwealth Government, it was proposed that the Commonwealth Government should set up and maintain a central executive consisting of an independent chairman, one representative of the services, one representative of the Commonwealth Department of Health, one of the British Medical Association and one of the Manpower Directorate. The matter had been referred to the several Branches, and the general feeling was that all control should cease. After discussion it was resolved that the Federal Council should oppose the formation of medical coordination committees under State control.

The National Health and Medical Research Council.

The Federal Council had before it the reports of the eighteenth session of the National Health and Medical Research Council held on November 22 and 24, 1944, and also the report of the nineteenth session held on May 21, 22 and 23, 1945. The reports were noted.

The General Secretary pointed out that the appointment of Dr. W. F. Simmons as representative of the Federal Council on the National Health and Medical Research Council would terminate at the end of the year. It was resolved that Dr. Simmons should be reappointed as representative for a further term of three years.

Contract Practice.

Contract Practice Committee.

It was resolved that the Contract Practice Committee should be reappointed, and the following were elected as members: New South Wales, Dr. H. R. R. Grieve; Queensland, Dr. L. P. Winterbotham; Victoria, Dr. C. H. Dickson; Tasmania, Dr. J. R. Robertson; South Australia, Dr. R. J. Verco; Western Australia, Dr. F. W. Carter; with the President, *ex officio*.

The Federal Common Form of Agreement.

The Federal Council considered the Federal Common Form of Agreement, which had been adopted at a meeting of the Consultative Committee of the Friendly Societies of Australia and the Contract Practice Committee of the Federal Council, held at Melbourne on June 14, 1940. Dr. W. F. Simmons said that it was time that the agreement was introduced. The end of the war had come, and the Council could not baulk the matter any longer. He moved that the time had arrived for the implementation of the Federal Common Form of Agreement. The motion was seconded by Dr. C. Craig. Dr. H. C. Colville raised the question as to whether it was really worth while to go on with the question of a common agreement. So many alterations had been made that the task appeared to him hopeless. The General Secretary said that it was important that uniform conditions in friendly society lodge practice should obtain throughout Australia. He thought that the Federal Council should proceed with the matter. If it did not agree on the necessity for such an agreement, the matter could be ended there and then. After further discussion Dr. Simmons's motion was carried.

The Federal Council had before it the comment of the Federal Council of the Friendly Societies' Association of Australia on the agreement and a series of proposed amendments. It also had similar documents from the Branches. The Council then took the agreement clause by clause and discussed each of the proposed alterations. It was resolved that the final document as amended should be forwarded to the Branches and to the Federal Council of the Friendly Societies' Association of Australia for their opinion.

Medical Planning.

Health Policy of the Australian Government.

The Federal Council had before it a statement concerning the conference with representatives of the Government held on September 29, 1944. This matter had been before the Federal Council at a previous meeting, when consideration of the implications of a fee-for-service system was deferred. The matter had been referred to the Branches. The General Secretary read replies of the Branches dealing with this matter. The correspondence was merely received.

The Future of Medical Practice.

The Federal Council considered a request from the Victorian Branch asking that further consideration should be given to the resolutions of the Victorian Branch Convocation, and that it should define its views on the method of payment in a medical service, on the method of contract and on the present doctor-patient relationship. At the meeting of the Federal Council held in March, 1945, consideration was deferred. After discussion it was resolved on the motion of Dr. H. C. Colville, seconded by Dr. C. Craig, that the six-point policy that had been elaborated by the Federal Council at its meeting in September, 1944, met the present situation, and that any further moves should come from the Government.

Health Policy of the Queensland Branch.

The health policy of the Queensland Branch, copies of which had been forwarded to members of the Federal Council, was formally received.

Schemes for Medical Benefits Developed by the Branches.

At the instance of the New South Wales Branch reference was made to the advisability of uniformity in regard to control, contribution rates and benefits payable in schemes for medical benefits developed by the Branches. The General Secretary explained the activities of the New South Wales Branch and referred to the Bankers' Health Society, which was now making its membership available to the general public. The consensus of opinion was that in such schemes there should be a uniformity of control. It was ultimately resolved:

> That it is desirable that any general scheme for the provision of medical benefits to the middle income group should be controlled by the medical profession.

Parliamentary Joint Committee on Social Security.

The eighth interim report of the Parliamentary Joint Committee on Social Security, issued on June 27, 1945, was received.

The South Australian Branch wrote in reference to the establishment of health centres as advocated by the Parliamentary Joint Committee on Social Security. It wished to know whether the Federal Council had approved of these centres. The President explained that the South Australian Branch wished to know whether the Federal Council approved of health centres as well as of group practice. Dr. A. E. Lee pointed out that the Council had approved of the setting up of experimental centres. Dr. A. J. Collins thought that the Federal Council should resolve that experimental health centres should be confined to persons of the hospital class, and he moved along these lines. Dr. W. F. Simmons pointed out that this was not the intention, but that they should be open to all and sundry. Dr. A. E. Lee said that unless the centres were open to everyone, it would not be a proper experiment. The President pointed out that he and Dr. Simmons, acting on the Medical Planning Committee of the Commonwealth Parliamentary Joint Committee, had agreed that the experimental health centres should be open to everyone. Dr. F. W. Carter held the view that in accordance with the previous discussion of the Federal Council the experiment would not be satisfactory unless the patient had to pay something. Dr. Collins's motion was put to the meeting and lost.

Meetings Held at the Government's Request.

The General Secretary reported that he had written again to the Minister for Health regarding the payment of expenses of members of the Association attending conferences at the request of the Commonwealth Government. The Minister had previously replied that he would approve of the payment of expenses of members of the British Medical Association if the Federal Council attended a meeting at the specific request of the Commonwealth Government, and if, as was the customary condition in such arrangements, no meeting of the Council or of any executive committee of the Council was held during the visit. In his second letter the General Secretary had submitted that the Government should also meet part of the expenses of the members of the Federal Council who attended a conference at the Government's request and at the same time attended a meeting of the Federal Council. In this regard he pointed out that concurrent meetings resulted in saving of time, expenses and manpower, and obviated unnecessary duplication of air and rail facilities. He also submitted that when it was necessary for the Federal Council to meet for the sole purpose of considering a matter referred to it by the Commonwealth Government, the expenses of the members of the Federal Council attending the meeting should be met by the Government. The Minister in reply stated that he regretted that he was unable to vary his previous decision.

The General Secretary also reported that he had written to the Minister for Health requesting that when the Federal Council was invited by the Government to send representatives to a conference, the Council should be informed not less than six weeks before the date of such conference of the details of any proposals that the Government desired to submit. A reply to this letter had been received, that as far as practicable the Federal Council's request would be met.

Hospital Services: The Hospital Benefits Act, 1945.

The General Secretary stated that the Federal Council had accepted an invitation to discuss with the Government, *inter alia*, the question of honorary medical service to public ward patients in the light of the proposal to abolish the means test. He stated that it was the intention of the Government by agreement with the States to abolish the means test in respect of patients admitted to public wards in public hospitals. It was therefore necessary for the profession to decide: (*a*) whether under the new conditions it was willing to render honorary service to patients admitted to public beds, and (*b*) if not, whether it desired payment for services rendered to the patients, and if so, the amount of such payment. Replies had been received from the Branches. The South Australian Branch replied that it had not had sufficient time to discuss the whole question of honorary medical service. The honorary staff of the Royal Adelaide hospital, however, had decided that, means test or no means test, it would carry on its honorary service as at present. The Adelaide Children's Hospital expressed the same opinion. The South Australian Branch Council endorsed these opinions. The Victorian Branch replied that it had not had time to discuss the implications of the *Hospital Benefits Act*, 1945; it stated that if the act was proclaimed, Victorian Branch members thought that the existing method of service should continue. If any resolution was passed by the Federal Council, the Victorian Branch added that the resolution should be ratified by the Victorian Branch Council before it would be binding on its members. The New South Wales Branch sent five resolutions as embodying its views. The resolutions were as follows: (i) That the Council demand the retention of the system of classification of patients into public, intermediate and private. (ii) That the Council is opposed to the acceptance of any payment to members of the profession for services rendered to patients classified as public ward patients. (iii) That the Council adheres to the system of honorary service in the public wards. (iv) That the Council recommends to the members of the profession that under no circumstances should they accept payment for services now rendered in an honorary capacity. (v) That the Council is opposed to patients receiving treatment free of charge in public wards when they can afford to pay intermediate or private fees. The Western Australian Branch replied that it was unwilling to treat in an honorary capacity patients who could afford to pay for treatment. The Tasmanian Branch replied that the problem did not apply to Tasmania, for no means test had been in existence for some time. It was also explained that in Queensland the system of part-time medical service to public hospitals was in existence. The General Secretary then read clauses 8, 9, 10 and 11 of the schedule of the *Hospital Benefits Act*, 1945. The clauses are as follows:

> 8. The State shall ensure that no means test is imposed on, and that no fees are charged to or in respect of, qualified persons occupying beds in public wards in public hospitals.
>
> 9. (i) The State shall ensure that the charges per day payable in respect of beds in non-public wards in public hospitals shall be reduced by the amount of the Commonwealth hospital benefit rate for non-public wards.
>
> (ii) The State shall ensure that no increase in those charges is made without the concurrence of the Commonwealth, and that any such increase made after the first day of September, 1945, and prior to the date of the agreement, shall cease to be applied, as from the date of the agreement, unless the Commonwealth concurs in the increase.
>
> (iii) The State shall ensure that, except with the concurrence of the Commonwealth, no charge is made for extra services or extra comforts in public or non-public wards in public hospitals.
>
> 10. The Commonwealth and the State, in conjunction with any other State which enters into an agreement with the Commonwealth in terms similar to the terms of the agreement, shall establish a council, to be known as the National Hospital Council, the functions of which shall include the establishment of standards of construction and service for hospitals.
>
> 11. The agreement may provide that nothing in the agreement shall be construed so as to affect the State's control of clinical teaching and research in the public wards of public hospitals.

It was then decided that the Federal Council should discuss and pass an opinion upon the merits and implications of the act. Dr. A. J. Collins said that he thought objections to the act should be based on objections to the abolition of the means test. Members of hospital staffs and delegates from the local medical associations in New South Wales, in their meeting with the Council of the Branch, had been

unanimous in their objections to the means test. They held that the best service was rendered by honorary service. Discussing the honorary system, Dr. Collins pointed out that one of its advantages was in the training of future specialists. In the Royal Prince Alfred Hospital, to whose staff he belonged, the number of senior medical officers exceeded those required to do the routine work of the institution. One of the reasons for this excess was that the juniors might take their turns in doing ward rounds with the seniors. Another advantage was that senior officers of large institutions accepted appointments at smaller hospitals and helped to train younger men. It might be stated that post-graduate courses would supply the need; but he held that to work under the eyes of a senior was of more value than being told as a member of a class how to do the work. For this reason it was better to retain the means test, in order that the honorary system should be retained. In regard to payment, he held that payment should not be accepted for work now done in an honorary capacity. To accept payment was to be a member of a part-time salaried service. If members of the profession gave way in this respect, they could not really object to the introduction of a full-time service. In any case they all objected to attending free of charge people who could afford to pay for treatment. He could see the urge to abolish the means test for all forms of social service. Some persons thought that what applied to some forms of social service necessarily applied to hospital service. This did not follow. Dr. Collins thought that the term "means test" was best avoided. It was better to refer to the classification of patients. Without doubt this should be continued. He regretted that all the States had not had time to consider the matter. The Government wanted the profession to accept payment for service, and in this matter Dr. Collins held that there could be no compromise. If a salaried service in hospitals was adopted, one result would be that the bare requirements of hospital staffing would be met and that all extra work would go by the board. Dr. C. Craig agreed with Dr. Collins. He thought that some distinction should be made between teaching hospitals and other hospitals. Dr. A. E. Lee said that Dr. Collins had spoken so well that there appeared to be nothing left to be said in the other direction. In Queensland this was not so. In Queensland they wanted the honorary system abolished. What the Federal Council had to do was to consider what would be its attitude to an act which had become law, and which contained no mention of a means test. Dr. Lee referred to hospitals as the workshops of the profession, and said that the act brought to a head arguments for and against honorary service which had been due for a long time. He gathered from the remarks made by Dr. Collins that the latter was of the opinion that service by a part-time paid staff would break down. Dr. Lee disagreed with this. In Queensland there was no difference at all, except that at the end of each month the medical officer who was attending received a cheque for his services. It had been put to him by a member of the New South Wales Branch Council that an advantage of the honorary staff was the retention of many medical officers on the staffs of smaller hospitals, and it was held that if payment was introduced staffs would become smaller. Dr. Lee pointed out that if medical officers were paid, the best men would do more work and some of the weaker men would be weeded out. In this way the general efficiency of the staff would be increased. If competition for a slightly reduced staff became keen, it would increase the efficiency of the staff. Again, in regard to teaching hospitals, in most universities a remuneration was offered to teachers, and in Queensland payment was also offered to teachers. Dr. Lee thought that much of the New South Wales fear was fear of the unpredictable. Dr. Collins held that under the honorary system and in regard to smaller hospitals organization was beneficial. If organization was desirable, it was even more desirable when practitioners had a greater interest in private practice. Part-time service would not necessarily lead on to a full-time salaried service. There was no reason why part-time service should lead to a full-time service. The profession could always refuse to be pushed into a full-time service. Queensland practitioners worked without an honorary system, and they thought that there was no danger in its abolition. As a matter of fact, Queensland had a means test, which was not applied. Dr. D. Gifford Croll said that Dr. Collins was right in the view that a man in a teaching hospital must have time for teaching. The honorary officer depended upon a small percentage of patients for earning his living. With the changes that were taking place the position might well be reversed. In Queensland 20% of patients were treated in private hospitals and 80% in public institutions; in Victoria the percentage of each was 50. The trend to the reduction of the number of private patients was one that had to be regarded seriously. Dr. N. M. Cuthbert said that no resolution adopted by the Federal Council could alter State conditions. He thought that the subject should be left to each State Branch. Dr. W. F. Simmons said that Dr. Cuthbert was probably right. Action would take place in the State sphere. Dr. Simmons pointed out that in New South Wales alone something like half a million hours a year were given by doctors in honorary hospital service. It would, in his opinion, be wiser to give honorary service even if the means test was abolished. Dr. H. C. Colville said that the Victorian attitude agreed with that of Dr. Collins. In reply to the question as to whether the medical profession would have taken any steps to abolish the honorary system or the means test, he could only say "no". This act tried to destroy the honorary system. The bad thing about this act was that it introduced means for the entry of a third party between the doctor and his patient. The Government would go and say: "We will show you how you can evade paying your doctor." The Government was treading with elephantine feet on the delicate organization of the medical profession. The Federal Council should protest. It should voice its objections to a scheme which would disrupt an organization of which politicians had no knowledge whatever. Dr. Colville thought that the Federal Council should proclaim its desire to maintain the *status quo*, and should not allow itself to be stampeded into any other course of action. Even if the means test was abolished, the medical profession should still retain its rights and should not accept payment. At the same time it should reserve the right to charge those who could afford to pay. It was then resolved that the Federal Council should demand the retention of the system of the classification of patients into public and non-public groups. It also resolved that in the event of the proclamation of the *Hospital Benefits Act*, 1945, with its consequent abolition of the means test, the existing honorary medical service to public bed patients should be continued until this important matter had been further considered by the Branches. The Federal Council recommended to the members of the profession that in no circumstances should they accept payment for services now rendered in an honorary capacity. The Federal Council also adopted the two following resolutions:

> (*a*) That a strong protest be made to the Minister against the introduction of an act which vitally concerns a medical service of many years' standing without any previous communication with the profession.
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> (*b*) That the Federal Council inform the Commonwealth Government that the Council is of the opinion that members of the medical profession should not attend, in an honorary capacity in public wards of public hospitals, patients who can afford to pay for private treatment.

At a conference with the Minister for Health held on Tuesday, October 16, no agreement was reached on this subject.

Hospital Accommodation and Personnel.

As at its previous meeting, the Federal Council resolved to write again to the Prime Minister, drawing his attention to the desperate position of hospitals, both public and private, resulting from the acute shortage of nursing and domestic staffs. The Federal Council suggested to the Prime Minister that steps should immediately be taken to transfer female workers from unessential civil occupations and also from the armed services. The General Secretary read a reply from the secretary to the Prime Minister, in which it was stated that measures for alleviating the problem of the shortage of nursing personnel and hospital staff had been suggested by the Special Committee of Inquiry set up by the Government. If these measures were adopted, they would provide additional hospital services for the civilian community. The manpower authorities in all States had been asked to take immediate action to direct female workers to hospital employment. It had been emphasized that the highest priority must be applied to the staffing of all hospitals.

Dr. D. G. Croll said that the manpower authorities had directed women to hospital service, but the women refused to go. The only way in which relief might be obtained was to have releases made from the armed services. Dr. H. C. Colville referred to the shortage of hospital beds. He said that the condition really was desperate. At the present time no account whatever was taken of one class of case, that comprising the emergencies. In private hospitals patients might be divided into two classes, those suffering from non-

urgent conditions and those whose conditions were urgent. The first group obtained all the beds, and nothing apparently could be done about the second. The obvious solution would be to divide hospitals into urgent and non-urgent sections, and to make it an offence to use an "urgent bed" for the treatment of a patient with a non-urgent condition. Dr. A. J. Collins said that the question was most important. In cities it was always necessary to have a certain number of beds set aside for emergencies, but the percentage that was necessary varied in different places. There were some ailments which, though serious, did not demand hospital treatment. As an example of this group, he said that patients with gastric ulcer could be nursed at home if their home conditions were reasonably good. Dr. Collins did not like the word "priority", but he thought that a list of priorities of diseases should be drawn up. The Federal Council then adopted a resolution expressing the view that steps should be taken to expedite the release of female service personnel for the purpose of staffing hospitals. It also expressed the opinion that steps should be taken to compel all private hospitals to reserve a proportion of their beds for emergency cases. It thought that the Branches should take all possible steps to implement this policy.

Brochure for Public Circulation.

Reference was made to a brochure dealing with the Federal Council's views on medical planning which had been prepared for public circulation. The Victorian and Western Australian Branches sent redrafted versions of the brochure. In these documents certain alterations were made in regard to both statements of fact and method of presentation. The Federal Council resolved that the brochure should be rewritten so as to include the amendments suggested by the Western Australian and Victorian Branches.

Representation of the Medical Profession on Hospital Boards.

At its previous meeting the Federal Council discussed a letter from the Queensland Branch, asking the Federal Council to approach the Commonwealth Government with a view to the appointment to hospital boards of members of the medical profession, in order to promote the efficiency of hospital and health administration. The General Secretary reported that he had written to the Commonwealth Minister for Health, who had replied that it was a matter in which the Commonwealth had no jurisdiction, and that representations should be made to State governments. The General Secretary said that he had also written to the Minister for Health and Home Affairs of Queensland, and had received a reply stating that the Queensland Governor in Council was empowered to appoint to membership of hospital boards any person in the community, whether male or female, and in so doing was not bound to make appointments from any particular section of the community. The letter was received.

Advertisements for Salaried Medical Officers.

A letter was received from the Editor of THE MEDICAL JOURNAL OF AUSTRALIA regarding the salaries offered to medical practitioners by governments, hospitals and universities, when they wished to fill certain positions on their staffs. The Editor pointed out that he was repeatedly having to refer to the General Secretary of the Federal Council and to Branch secretaries advertisements offering salaries which appeared to him to be inadequate. He pointed out that on the one hand the Editor could not, and in his opinion should not, try to dictate to any governmental or other body what salaries should be offered for the performance of certain duties. All that he could say was whether he was willing to accept an advertisement offering a certain salary. In other words, the advertiser was free to offer his advertisement to any newspaper or other publication, whether it met with the approval of the journal or not. There was another point of view, that if the journal accepted an advertisement offering a certain salary, other bodies would assume, as they were probably justified in assuming, that the range of salary was acceptable to the medical profession. Conditions varied in the several States, and it would be difficult to lay down a scale to cover every kind of position and every kind of work. This matter had been before the Federal Council on a previous occasion, but had not been considered during the course of the war. The Editor pointed out that if some standards could be set up or some guiding principles could be stated, his work and that of the Branch secretaries would be made easier. If the Federal Council did not think that this could be done, the Editor was prepared to carry on as he had done in the past. The Federal Council, after discussion, and after hearing the views of the Editor, who was invited to speak, decided to ask him to carry on as before.

Salaries of Resident Medical Officers.

The New South Wales Branch sent to the Federal Council a copy of the judgement of the Industrial Commission of New South Wales on the application by certain Sydney hospitals for an order or determination fixing the remuneration of resident medical officers. It was pointed out that in New South Wales the Branch Council had taken an interest in the matter, because it felt that it had a duty to resident medical officers. Reference was also made to the successful application by Queensland resident medical officers for an increase in salary. In discussion it was stated that the Western Australian and South Australian Branches were taking steps to follow the example of New South Wales.

Industrial Medical Officers.

Reference was made to the terms and conditions of employment of industrial medical officers which had been considered at the previous meeting of the Federal Council. A letter had been received from the South Australian Branch, stating that uneasiness had existed among practitioners in the State in regard to the treatment of munition workers by the industrial medical officer. The Council considered that except for cases of extreme urgency, an employee needing extramural treatment should be referred by an industrial medical officer to the employee's private medical practitioner. The General Secretary said that he had replied to the South Australian Branch, stating that it was the intention of the Federal Council that an industrial medical officer who was called upon in an emergency to attend an injured worker during his part-time service to the employer should be entitled to a fee for such service in addition to any payment made in respect of his industrial medical duties. It was the current practice of industrial medical officers when called upon to attend an injured worker to render first aid, and then to refer the worker to his usual medical attendant. The Federal Council did not desire any departure from this procedure. On receipt of this letter the South Australian Branch had asked that the matter should be put on the agenda paper of the present meeting. On discussion it was decided that the General Secretary had made the matter quite clear, and his action was approved.

The Appointment of Quarantine Medical Officers.

At the previous meeting of the Federal Council it was resolved at the instance of the Victorian Branch to write to the Commonwealth Department of Health, requesting that all vacant positions in the department should be advertised in the Press. This matter arose through the appointment of a medical practitioner as quarantine officer, although no applications had been called for the position by advertisement. The General Secretary reported that he had written to the Director-General of Health and had received a reply, in which it was stated that it was the practice of the department to advertise permanent positions. With regard to temporary and part-time positions, the conditions varied considerably, and it was regretted that no assurance could be given that advertisements in regard to these vacancies would be published in the Press. It was resolved that a further letter should be written to the Director-General of Health, expressing regret that he had not seen his way clear to comply with the request of the Federal Council, and asking that the matter should be reconsidered.

Definition of a Specialist.

A letter was received from the South Australian Branch, advising that it had been negotiating an agreement with the South Australian Fire and Accident Underwriters' Association in connexion with the *Workers' Compensation Act*. As the question of the fees payable to specialists had to be considered, it sought the help of the Federal Council in the definition of a specialist for the purposes of the act. The General Secretary reported that he had sent a copy of the South Australian Branch letter to the other Branches, and he read the replies. After discussion it was resolved that for the purposes of the *Workers' Compensation Act* a specialist should be defined as a practitioner who confined his practice to a particular branch of medicine or surgery by virtue of special qualifications or experience, and in addition was recognized as such by his professional colleagues.

Commonwealth Employees' Compensation Act.

At its last meeting the Federal Council had before it a schedule of fees drawn up at its request by Dr. W. F. Simmons in connexion with the *Commonwealth Employees' Compensation Act*. At that meeting also it received a list of suggested amendments by the Western Australian Branch. The General Secretary said that in accordance with the decision of the Federal Council at its previous meeting, the suggestions of the Western Australian Branch had been sent to the other Branches for their consideration and comment. The schedule was then considered clause by clause, and the representatives of the Branches brought forward the suggested alterations of their Branch Councils. It was decided that the amended schedule should be submitted to the appropriate Commonwealth authority for approval, and that subject to the approval of the Commonwealth authority the schedule should be forwarded to the Branches.

Penicillin.

The General Secretary reported that in accordance with the resolution adopted at the previous meeting of the Federal Council, he had written to the Director-General of Health, pointing out that under existing conditions it was necessary for a medical practitioner requiring penicillin to communicate with the chief quarantine officer of the capital city of the State in which he resided. He suggested on behalf of the Federal Council that, with a view to improving the facilities for distribution, consideration should be given to the utilization of the larger public hospitals throughout the country as base depots for the storage and distribution of penicillin. The General Secretary then read the Director-General's reply. In a letter dated September 12, 1945, the Director-General advised that it had up to that time been found inexpedient to repeal the Penicillin Order. Careful consideration was, however, being given to the earliest possible removal of the limitations imposed by the order, and so far as had been possible within the limits of supplies and the essential demands of the services, to interpret liberally the provisions of the order. It had been possible with increased production of penicillin in Australia to utilize the larger hospitals both in the city and in the country as base depots for the distribution of penicillin. Through the cooperation of medical superintendents it had been possible to maintain this distribution and at the same time to retain the necessary provisions of the Penicillin Order. Consultations had taken place with the Pharmaceutical Association of Australia regarding the possibilities of distribution through normal pharmaceutical channels of supply. The Director-General assured the Federal Council that the whole position remained under review and was the subject of continued consultations between his office, the director of the Commonwealth Serum Laboratories and the chairman of the Medical Equipment Control Committee. The problem remained essentially one of distribution according to availability of supply. The Director-General's letter was received.

Commonwealth Serum Laboratories Products.

The Federal Council had before it a letter received from the Victorian Branch. The Branch sent for consideration by the Federal Council a copy of a letter received from one of its members regarding products of the Commonwealth Serum Laboratories. The writer pointed out that the laboratories allowed wholesale chemists a rebate from the price list in respect of products supplied to doctors. The chemists did not carry stocks of most products, and approached the laboratories when an order was placed. In order to save time the member telephoned the Commonwealth Serum Laboratores direct and asked that products should be posted to him, and he carried stocks. The accountant at the laboratories said that no discount could be allowed, as this was Canberra's policy. In order to cover postage, telephone calls and dead stock, the member had to charge from 15% to 20% on listed prices or bear the loss. The member stated that the provision of stock in the surgery promoted efficiency, and he also thought that the pharmaceutical chemists had too much to do. From inquiry among them he had found that they were rather glad of his direct dealing with the Commonwealth Serum Laboratories. The member thought that the matter should be taken up with the Department of Health at Canberra, so that the cost to the patient could be reduced. During discussion it was pointed out by one representative that certain products such as pollen had to come directly to the practitioner. It was resolved that a request should be made to the Director-General of Health, asking that the same rebate should be allowed on products of the Commonwealth Serum Laboratories supplied to medical practitioners as was allowed to pharmaceutical chemists.

Post-Rubella Deafness.

The General Secretary stated that a letter had been received from the South Australian Branch, advising that its Council had for some time past been considering the education of deaf mutes whose condition was the result of maternal rubella. The cooperation of the Kindergarten Union of South Australia had been sought. The union had approved of the placing of certain premises at the disposal of the South Australian Branch, and had recommended that a pre-school trained teacher should be secured, provided the expenses were met by the South Australian Branch. The Branch had no money available for this purpose. The Ear, Nose and Throat Section of the South Australian Branch had made a recommendation approved by the Council, that the Natonal Health and Medical Research Council should be approached for a grant of £1,500 per year for three years, to provide salaries for research and for a teaching staff, for equipment and for clerical assistance for a school at which children suffering from congenital deaf-mutism would be taught. The South Australian Branch suggested that the Federal Council should have the matter brought to the notice of the National Health and Medical Research Council, through its representative. The General Secretary reported that the matter had been referred to the Branches, and that they had supported the South Australian Branch's suggestion. Dr. W. F. Simmons said that the National Health and Medical Research Council was interested in this matter, and that the present was the proper time for its discussion. He thought that perhaps a start should be made in Adelaide, but pointed out that there were many children in other places affected by deaf-mutism as a result of maternal rubella. In discussion it was pointed out that the National Health and Medical Research Council should determine where a start was to be made, and it was resolved on the motion of Dr. R. J. Verco, seconded by Dr. A. E. Lee, that the South Australian Branch's recommendation should be endorsed and that Dr. W. F. Simmons should be asked to bring the matter before the National Health and Medical Research Council.

Pensions to Sufferers from Tuberculosis.

The General Secretary reported that in accordance with the decision of the Federal Council at its previous meeting, he had written to the Commonwealth Minister for Health, asking that immediate steps should be undertaken to provide adequate pensions to sufferers from tuberculosis. He read a reply from the Minister, who pointed out that the provision of such pensions was a matter of government policy. The Minister stated that he was going into certain questions in connexion with social security legislation, and he would keep the views of the Federal Council in mind when making his recommendations.

Immunization against Pertussis.

The General Secretary reported that he had received a communication from the Australian Communist Party in reference to a proposed campaign for mass immunization against pertussis. He had obtained advice from Professor H. K. Ward on the subject and had sent Professor Ward's recommendations to the Communist Party. The General Secretary's action was approved.

Australian Pharmaceutical Formulary.

The General Secretary reported that correspondence had taken place with the New South Wales Branch, with the Pharmaceutical Society of New South Wales, and with Mr. H. Finnemore, editor of the "Australian Pharmaceutical Formulary". A revision of the formulary was being undertaken. The General Secretary pointed out that the "Australian Pharmaceutical Formulary" bore the *imprimatur* of the Federal Council, and he read the original minute dealing with the publication of the first edition in 1933. Mr. Finnemore had stated that the formulary was to be enlarged and improved in several ways, and he wished to know what help could be obtained from the Association in regard to the distribution of the formulary. In the discussion it was pointed out that as the Federal Council had had a share in the establishing of this formulary, it should have a voice in any subsequent edition. It was resolved that Dr. Byron Stanton should be asked to act on behalf of the Federal Council in the revision of the "Australian Pharmaceutical Formulary", and that the final draft should be submitted to Dr. F. W. Carter and Dr. A. J. Collins before publication.

The Importation of Sulphadiazine.

The General Secretary stated that a letter had been received from the New South Wales Branch regarding the

reported restriction on the importation of sulphadiazine and a request by the authorities that sulphamerazine should be used in its place. It was thought that sulphadiazine was a highly efficient drug, and that the common use of sulphamerazine might be attended by untoward results. The General Secretary read a reply that he had received from the Medical Equipment Control Committee, to whom the matter had been referred. In the course of his reply the chairman stated that sulphamerazine was manufactured in Australia, and that exhaustive clinical tests had proved that it was no more dangerous than any other member of the sulphonamide group of drugs, and was probably slightly more efficacious in the treatment of those diseases for which this group was most valuable.

The Proprietary Medicines Investigation Committee.

Further reference was made to the proposal previously discussed by the Federal Council to establish a committee which would investigate the claims of proprietors of proprietary medicines before their acceptance for publication by the editors of newspapers. The General Secretary said that he had received a letter from the chairman of the Proprietary Medicines Investigation Committee, asking the Federal Council to appoint a representative to the committee. He had replied that Dr. A. J. Collins would be the representative of the Federal Council, and the chairman sent certain recommendations regarding the activities of this committee. The nomination of Dr. A. J. Collins as the Federal Council's representative was approved.

The Unemployment and Sickness Benefit Act, 1944.

At its previous meeting the Federal Council discussed the *Unemployment and Sickness Benefit Act*, 1944. At that time some correspondence had taken place between the General Secretary and the Director-General of Social Services regarding the question of secrecy and the obtaining of the patient's consent before any information concerning his condition was given by a medical practitioner to those in charge of the administration of the act. The General Secretary now reported that he had received from the Victorian Branch a summary and a series of comments on the act. This document had been circulated among members of the Council. The most important matters for consideration dealt with questions of certification and professional secrecy. It was pointed out that some practitioners in New South Wales had been asked to give certain particulars, and it had been necessary to impress on them that the consent of the patient must be obtained. In view of the importance of the subject, it was thought that the question should be taken to the highest authority, and it was therefore resolved that the Prime Minister should be asked that when it was necessary for a government department to require the production of a medical certificate stating the nature of the patient's illness, the department concerned should first obtain from the patient written permission for the disclosure of the necessary information.

The Federal Council resolved that the Victorian Branch should be thanked for having summarized and commented on the act.

The Australian Naval Medical Services.

Deferred Pay of Medical Officers.

A letter was received from the Western Australian Branch in reference to the deferred pay of medical officers serving with the Royal Australian Navy. The Branch drew attention to an amendment of a Naval Article dealing with deferred pay. The amendment is as follows:

> Subject to the next succeeding clause, Deferred Pay or interest on accumulated Deferred Pay shall not be credited to—
>
> (*a*) any Medical Officer appointed to the Permanent Naval Forces (Sea-Going) prior to the first day of January, 1923—after he has attained the age of 55 years;
>
> (*b*) any Surgeon Commander appointed to the Permanent Naval Forces (Sea-Going) between the first day of January, 1923, and the first day of April, 1934, both dates inclusive—after he has attained the age of 50 years; or
>
> (*c*) any Surgeon Captain appointed to the Permanent Naval Forces (Sea-Going) between the first day of January, 1923, and the first day of April, 1934, both dates inclusive—after he has attained the age of 55 years.
>
> Provided that interest at the rate of 3½ per cent. per annum on the amount of accumulated Deferred Pay standing to the credit of any such officer on the thirtieth day of June immediately prior to his attaining the specified age applicable to his case, shall be allowed from the first day of the month of July preceding the date upon which he attains that age to the end of the month in which he attains that age.
>
> Notwithstanding anything contained in the last preceding sub-regulation, Deferred Pay and interest on accumulated Deferred Pay may be credited to a Medical Officer to whom that sub-regulation applies, who has not at his credit—
>
> (i) in the case of a Surgeon Commander .. £4,500
>
> (ii) in the case of a Surgeon Captain £6,500
>
> until the amount at his credit reaches £4,500 or £6,500, as the case may be.

It was pointed out that prior to this deferred pay was given irrespective of the officer's age. Two considerations were discussed. The first was that medical officers had not been advised of the change in conditions of service, and their attention had only recently been drawn to the amended article. The second was that a medical officer to whom the provisions of the article related might have his pay reduced by 11s. 6d. per day whilst he was still on active service. During discussion the view was expressed that the action of the naval authorities constituted a breach of faith with their medical officers. It was resolved that a deputation should wait on the Minister for Defence in order to put the matter before him, and that the deputation should consist of Dr. A. J. Collins, Dr. W. F. Simmons and the General Secretary.

General Conditions of Service.

The Federal Council also had before it a document dealing with the terms and conditions of service of medical officers in the Royal Australian Navy. It will be remembered that before the present war the conditions for service of medical officers in the Royal Australian Navy were discussed on several occasions in the editorial columns of this journal, and it was pointed out that the conditions were not likely to attract suitable types of medical graduates. In the statement before the Federal Council, the disadvantageous terms were clearly set out. It was also pointed out that during the period 1931 to 1934 the Royal Navy and the Royal Australian Navy were faced with a grave shortage of doctors, owing to unsatisfactory conditions. As a result of this shortage and of an agitation by the British Medical Association in England, a commission known as the Warren Fisher Commission was set up in England and made certain recommendations. Some of these recommendations were adopted by the Royal Australian Navy. In the discussion it became clear that under present conditions the Royal Australian Navy would find it extremely difficult after the present war to obtain its complement of medical officers. It was also clear that medical graduates could not be advised to join the service. It was therefore resolved that a request should be made to the Minister for Defence for the setting up of a commission on the lines of the Warren Fisher Commission for review of the terms of service of medical officers in the armed services, with a view to betterment both in professional opportunity and financial conditions of service.

War Emergency Organization.

Conditions of Service Committee.

Dr. H. C. Colville and Dr. F. L. Davies were reappointed members of the Conditions of Service Committee of the Federal Council, with powers of cooption.

Repatriation Commission.

The Federal Council gave further consideration to the provision of medical benefits for widows, orphans and widowed mothers of service men in the present war. An agreement in regard to the service had been discussed with the Repatriation Department for many months. On the present occasion the Federal Council discussed an alteration in the agreement that had been suggested by the Repatriation Commission concerning the use of a pharmaceutical formulary that would be acceptable to the medical profession. The Repatriation Commission's amendment was accepted, and it was resolved that the amended agreement covering beneficiaries connected with the war which started on September 3, 1939, should come into force on January 1, 1946.

The Federal Council considered a request by the Victorian Branch that it should discuss with the Repatriation Com-

mission the institution of a decentralized repatriation service in the suburbs of capital cities and the establishment of an appointment system. During discussion Dr. D. G. Croll pointed out that this system was operating in Brisbane and was found to be satisfactory. Those who came for advice came only on account of war disabilities. It was resolved that the Victorian Branch recommendation should be adopted, and that the Repatriation Department should be asked to give consideration to the establishment of decentralized out-patient clinics.

A request was also received from the Victorian Branch that the fee for attendance by local medical officers on repatriation patients should be 10s. 6d. This recommendation was accepted, and it was resolved that the fee should be adopted as a minimum.

The Rehabilitation of Medical Officers in the Armed Forces.

The Federal Council gave further consideration to the rehabilitation of medical officers in the armed services. At previous meetings it had discussed the part that should be taken by the several Branches in the work of rehabilitation, and it now considered letters from the Tasmanian Branch and from the South Australian Branch, in which suggestions for a conference between various bodies were made. Work that was being done in Victoria and New South Wales was described, and a letter from Dr. F. W. Carter to the President dealing with the matter was read. A letter from Colonel W. D. G. Upjohn, Chairman of the Central Medical Coordination Committee, was also considered. The correspondence was received.

A letter was received from the Victorian Branch, suggesting that the Federal Government should be approached with a view to the extension of the present rehabilitation facilities to medical officers discharged from the services, so that post-graduate work might be undertaken outside Australia. The General Secretary reported that he had sent the letter to the Branches, and that they had all been in agreement with the suggestion. It was pointed out that the Federal Government was loath to issue passports to medical graduates to leave Australia, but it was held that the advantages to be gained for Australia by the study of medical science in other parts of the world was inestimable. It was resolved that the Federal Government should be approached in the terms of the Victorian Branch suggestion.

Reference was made to the post-graduate training of medical officers in the services. It was resolved that the General Secretary should communicate with the Central Medical Coordination Committee, asking for a full statement in regard to the arrangements that had been made for the post-graduate training of officers in the services.

A letter was received from the Central Medical Coordination Committee, asking for the cooperation of members of the profession in the securing of assistantships and partnerships for ex-service medical officers. One member of the Council stated that when partnerships were offered ex-service medical officers, the vendors rated their practices at far too high a level, and the sums asked bore no relationship whatever to a man's ability to pay. It was also pointed out that if an ex-service man was taken into partnership and general conditions changed in such a way that the value of the practice was reduced, this would be hard on the ex-service man. It was thought that some part of the risk of such a happening should be borne by both parties. Dr. F. W. Carter said that in Western Australia those who bought practices or partnerships were asked to submit their agreements to the Council before they were signed. Dr. W. F. Simmons described what had been done in New South Wales in an effort to discover openings for ex-service medical officers. It was resolved that the Central Medical Coordination Committee should be assured of the fullest cooperation of the Federal Council in the securing of assistantships and partnerships for ex-service medical officers.

Shortage of New Motor-Cars.

At its prevous meeting the Federal Council considered the shortage of new motor-cars and the urgent need of medical practitioners whose cars were fast wearing out. One of the suggestions made was that a pool of motor-cars should be established, on which medical practitioners whose motor-cars required repairs should be able to draw. Consideration of this suggestion had been deferred pending the receipt of further information. The General Secretary stated that no further information had been received.

A further letter was received from the Queensland Branch, suggesting that the Federal Council should take some action in the matter. It was pointed out that some new cars were being sold in Queensland. The General Secretary said that the Transport Department in New South Wales had given every possible assistance to medical practitioners in regard to all matters connected with motor-cars. Demobilized medical officers would be amongst those having the first priority to buy new cars. After further discussion, in which reference was made to the sale of vehicles by the army, the correspondence was received.

Protection of Practices Schemes.

A letter was received from the trustees of the Western Australian Branch Protection of Practices Scheme, setting out the result of representations made by them to the Commonwealth Treasurer regarding the liability of the funds in respect of income tax. The letter was received, and it was resolved that a copy should be sent to each of the Branches. The results obtained from the inquiry were due, it was stated, to the activities of Dr. F. W. Carter, and it was resolved that he should be thanked for his services.

At a previous meeting of the Federal Council reference was made to contributions of two salaried medical officers in South Australia to protection of practices schemes and to the inclusion of the contributions as deductions for the purposes of income tax. The Commissioner of Taxation had refused to allow the sums paid as deductions, and the Federal Council resolved to write to Mr. J. B. Chifley, the Treasurer. A reply was read from the Treasurer, in which the view of the Income Tax Commissioner was upheld. At the same time the Treasurer stated that the Commissioner would be prepared to review the matter if the taxpayers could produce any evidence which had not already been laid before the department, and which would indicate that they derived income in the carrying on of a business in terms of the case and otherwise than as employees.

Australian Council for UNRRA.

It was noted that Dr. William Wood had been appointed as representative of the Federal Council on the Australian Council for UNRRA.

Shortage of Ophthalmic Practitioners.

At its previous meeting a letter was received from the Ophthalmological Society of Australia (British Medical Association), asking the Federal Council to approach the directors of the medical services with the request that the services should be combed for men willing to undertake ophthalmology as a speciality. The General Secretary read the correspondence with the directors, and after discussion it was resolved that a further letter should be written to the directors of the medical services, asking for the release of a number of medical officers who had expressed willingness to undertake training in ophthalmology.

Professional Rooms for Civilian Medical Practitioners.

The General Secretary read a letter from the Western Australian Branch dealing with the difficulty experienced by medical officers from the services in acquiring professional rooms on their resumption of civil practice. The Western Australian Branch set out the difficulties that had been experienced in Western Australia, and cited the case of one doctor who had returned to civil practice after more than five years 'service, and who had been and was still unable to regain possession of his house. His tenants had permitted him to occupy two rooms, and this meant that he was compelled to reside at a hotel. The growing nature of his practice made the arrangement most unsatisfactory both for himself and for his patients. The General Secretary stated that the Western Australian letter had been sent to the Branches, and that they all agreed with the Western Australian Branch that the matter should be brought to the notice of the Commonwealth Government. It was pointed out in the discussion that under the present law it was very difficult to dispossess a tenant. It was therefore resolved that members of the professon occupying suites in city buildings should be urged to share them with ex-service medical officers who were unable to obtain professional accommodation. It was also resolved that an approach should be made to the proper authority to obtain an amendment of the Landlord and Tenant Regulations, so that demobilized medical practitioners might obtain repossession of their professional premises. A further resolution stated that an approach would be made to the Federal Government in an attempt to obtain office accommodation now occupied by government departments in other than government buildings for use as professional premises. The final resolution was that an approach should be made to the proper authority.

pointing out the urgent necessity of the construction of additional premises, and asking for a higher priority for this purpose.

The Rationing of X-Ray Film.

The General Secretary read a letter, dated May 22, 1945, from the chairman of the Medical Equipment Control Committee, regarding the shortage of X-ray film which occurred at that time. This was mentioned in THE MEDICAL JOURNAL OF AUSTRALIA. He now read a letter from the chairman of the Medical Equipment Control Committee, in which it was stated that the supply position in regard to X-ray film was improving, and that the firms supplying the film had been asked to discontinue the voluntary rationing which they had undertaken. The correspondence was noted.

Emergency Medical Service.

The General Secretary said that a letter had been received from the Western Australian Branch, asking whether any policy had been formulated regarding the return of medical men from active service to civil practice who wished to commence medical practice in an area in which an Emergency Medical Service man had been posted. He said that the letter had been circulated amongst the Branches, and he read the replies received from them. It was resolved, after discussion, that the Central Medical Coordination Committee should be informed that the Federal Council was of the opinion that when a medical practitioner desired to commence practice in a district which was being cared for by an Emergency Medical Service practitioner, the emergency requiring the presence of that practitioner should be considered to have ceased, but that this should not apply in cases in which an Emergency Medical Service practitioner was replacing a practitioner absent on service with the armed forces.

The Rates of Pay for Part-Time Duties in the Australian Army Medical Corps.

The General Secretary read a letter from the Victorian Branch regarding a circular which had been distributed by the Deputy Director of Medical Services of the Victorian Lines of Communication Area, dealing with the rates of pay for part-time duty of medical officers with the Australian Army Medical Corps. The Victorian Branch thought that an emphatic protest should be made against the rates of pay, which were such as would be unacceptable to an unskilled labourer. The letter had been sent to the Branches, and they were unanimous in their support of the Victorian Branch's attitude. It was resolved that the Federal Council should make an emphatic protest to the Director-General of Medical Services of the Army against the rates of pay for medical officers on part-time duty as being considered wholly inadequate.

Fees for the Examination of Recruits to the Army.

The General Secretary said that he had received a letter from the Victorian Branch recommending to the Federal Council that the fee for examination of recruits to the army should be increased. It was pointed out that a fee of 2s. 6d. had been introduced at the time of compulsory military training, when an extensive medical examination was not required. No protest had been made during the war, but now that the war was at an end it was thought that the fee should be increased. An examination of an army recruit today was an extensive and time-consuming matter. It was resolved that consideration should be deferred pending the making of further inquiries.

Civilian Medical Practice.

The General Secretary read a letter from the Honorary Secretary of the Queensland Branch, asking that an approach should be made to the Commonwealth Government in regard to the urgent need of the civil population, so that it should receive equal attention with the army in the release of medical officers from the services. It was resolved:

> That the Prime Minister be approached concerning the urgent necessity, in view of the desperate shortage of civilian medical practitioners, of immediate large releases of doctors from the armed services; that it be pointed out that with the cessation of hostilities the full establishment of the Army Medical Services, which has been designed to deal with times of peak casualties, becomes unnecessary; to protect the health of the civilian population and of the civilian practising profession, and also to preserve the morale of service doctors, such a course of action is imperative.

Australasian Medical Congress (British Medical Association).

The General Secretary raised the question of the holding of a session of the Australasian Medical Congress (British Medical Association). He pointed out that it would take about twelve months to organize a session. He thought that the question should be considered in view of the cessation of hostilities. Dr. F. W. Carter said that he thought a congress should be held as soon as possible. The Western Australian Branch was still anxious that a congress should be held in Perth. He thought that it would not be possible to hold a congress anywhere before a further period of two years had elapsed. It was resolved that consideration of the matter should be deferred.

Federal Emergency (Compensation) Fund.

On several previous occasions consideration of the Federal Emergency (Compensation) Fund had been deferred. It was now resolved that no further action should be taken in the matter.

Public Medical Services.

The question of the public medical services, consideration of which had been deferred at several previous meetings, was mentioned, and it was decided that no further action should be taken.

Principles of Medical Ethics.

At previous meetings the drawing up of a code of medical ethics had been deferred. The General Secretary introduced the subject, and it was decided that with a view to the formulation of a code of medical ethics the Branches should be requested to state their opinions on the principles that should be included in such a code.

Date and Place of Next Meeting.

It was resolved that the date and place of the next meeting should be left in the hands of the President.

Votes of Thanks.

Votes of thanks were passed to the Victorian Branch Council and to Dr. F. L. Davies and Dr. H. C. Colville for their hospitality, and to the Victorian Branch for the use of its offices.

The thanks of the Council were also extended to the President for presiding.

Post-Graduate Work.

FORTHCOMING ENGAGEMENTS AT SYDNEY.

THE New South Wales Post-Graduate Committee in Medicine announces that a film afternoon will be held at the Stawell Memorial Hall, 145, Macquarie Street, Sydney, at 4.15 o'clock p.m. on Wednesday, December 12, 1945. Films entitled "The Pasteur Institute" and "Eclampsia" will be shown.

The following courses will begin on January 7, 1946: course for general practitioners; advanced course in medicine; courses for M.S. Part I and Part I of the examination for the following diplomas: gynæcology and obstetrics; ophthalmology; laryngology and otorhinology. All courses will be of ten weeks' duration. An advanced course in surgery is contemplated for four to six weeks beginning in February. Inquiries may be made from the Post-Graduate Committee in Medicine, 131, Macquarie Street, Sydney. Telephone: Numbers BW 7483, B 4606.

Nominations and Elections.

THE undermentioned has applied for election as a member of the New South Wales Branch of the British Medical Association:

Brennan, Desmond James, M.B., 1939 (Univ. Sydney), 25, Park Road, Burwood.

The undermentioned have been elected as members of the New South Wales Branch of the British Medical Association:

Collier, Jean Manning, M.B., B.S., 1939 (Univ. Sydney), No. 2, Yallambee, Railway Street, Chatswood.

Dalton, William Redmond, M.B., 1941 (Univ. Sydney), 171, Avoca Street, Randwick.
Ellis, James Morrison, M.B., B.S., 1944 (Univ. Sydney), NX207585, Captain J. M. Ellis, Inter Services Medical Wing, Showground, Sydney.
Grant, Peter John Falconer, M.B., B.S., 1945 (Univ. Sydney), Sydney Hospital, Sydney.
Hammond, Cathrena Constance, M.B., B.S., 1945 (Univ. Sydney), Parramatta District Hospital, Parramatta.
Lantos, Stephen Stacey, M.B., B.S., 1944 (Univ. Sydney), District Hospital, Wallsend.
Manion, Newman Eugene, M.B., B.S., 1945 (Univ. Sydney), 108, Lang Road, Centennial Park, Sydney.
Jackson, Murray Archibald, M.B., B.S., 1945 (Univ. Sydney), Flat 73, T. and G. Building, Elizabeth Street, Sydney.
McQueen, Ewen Garth, M.B., B.S., 1940 (Univ. Sydney), Surgeon Lieutenant E. G. McQueen, Edgewater, 6, Billyard Avenue, Elizabeth Bay.
McTiernan, Mary Patricia, M.B., B.S., 1945 (Univ. Sydney), 77, George Street, Parramatta.
Russell, William Vincent, M.B., B.S., 1938 (Univ. Sydney), 4, Sybil Street, Eastwood.
Whitelaw, Courtenay Warwick, M.B., B.S., 1942 (Univ. Sydney), Flight Lieutenant C. W. Whitelaw, R.A.A.F. Station, Tocumwal, New South Wales.

THE undermentioned have been elected as members of the New South Wales Branch of the British Medical Association as from January 1, 1946:

Barrett, Alex Keith, M.B., B.S., 1939 (Univ. Sydney), 16, Cambridge Road, Drummoyne.
Capel, Ross Bruce, M.B., B.S., 1945 (Univ. Sydney), Base Hospital, Orange.
Graham, Elizabeth Dinah, M.B., B.S., 1945 (Univ. Sydney), St. Joseph's Hospital, Auburn.
Gunther, William Willis, M.B., B.S., 1938 (Univ. Sydney), 29, Howe Street, Lambton, Newcastle.
Hughes, Laurence Stuart, M.B., B.S., 1940 (Univ. Sydney), Ryde District Soldiers' Memorial Hospital, Eastwood.
Leventhal, Frank, M.B., B.S., 1944 (Univ. Sydney), 22, Coolong Road, Vaucluse.
Rae, John Morell, M.B., B.S., 1942 (Univ. Sydney), NX204018, Captain J. M. Rae, 2/1 A.G.H., Australia.
Rail, Leonard Reuben (registered Israel), M.B., B.S., 1939 (Univ. Sydney), 27, Byron Street, Coogee.
Rudd, George Vincent, M.B., B.S., 1939 (Univ. Melbourne), D.Sc., 1934 (Univ. Melbourne), Major G. V. Rudd, 113 (C) Military Hospital, Concord.
Schmidt, Eric Egmont, M.B., B.S., 1945 (Univ. Sydney), District Hospital, Wallsend.
Segal, Zara, M.B., B.S., 1944 (Univ. Sydney), 14, Avoca Street, Bondi.
Wilson, George Charles, M.B., B.S., 1943 (Univ. Sydney), 83, Chelmsford Avenue, Lindfield.
Short, Benjamin, M.B., B.S., 1939 (Univ. Sydney), "Susanna", Pittwater Road, North Narrabeen.

Naval, Military and Air Force.

CASUALTIES.

ACCORDING to the casualty list received on November 30, 1945, Captain M. M. Brown, Hobart, Tasmania, previously reported "missing, believed deceased", is now reported "died whilst prisoner of war".

DECORATIONS.

Acting Surgeon Lieutenant-Commander James Stewart Guest has been created an Officer of the Most Excellent Order of the British Empire (Military Division) for services as senior medical officer of H.M.A.S. *Westralia*.

Surgeon Lieutenant-Commander William Hugh Milroy has been mentioned in dispatches for his services as senior medical officer of H.M.A.S. *Manoora*.

Books Received.

"Recent Advances in Neurology and Neuropsychiatry", by W. Russell Brain, M.A., D.M. (Oxon.), F.R.C.P., and E. B. Strauss, M.A., D.M. (Oxon.), F.R.C.P.; Fifth Edition; 1945. London: J. and A. Churchill Limited. 8″ × 5″, pp. 377, with 32 illustrations. Price: 18s.

"People at Work: A Digest of Business and Industrial Psychology"; 1944 Sydney: Angus and Robertson Limited. 9¼″ × 6″, pp. 72. Price: 2s. 6d.

"The Psychology of Women: A Psychoanalytic Interpretation", by Helene Deutsch, M.D.; Volume II, Motherhood; 1945. New York: Grune and Stratton. 8¼″ × 5″, pp. 506. Price: $5.00.

Diary for the Month.

DEC. 11.—New South Wales Branch, B.M.A.: Medical Politics Committee.
DEC. 11.—Tasmanian Branch, B.M.A.: Ordinary Meeting.
DEC. 13.—New South Wales Branch, B.M.A.: Branch Meeting.
DEC. 14.—Queensland Branch, B.M.A.: Annual Meeting.
DEC. 17.—Victorian Branch, B.M.A.: Hospital Subcommittee.
DEC. 17.—Victorian Branch, B.M.A.: Finance, House and Library Subcommittee.
DEC. 18.—Victorian Branch, B.M.A.: Organization Subcommittee.
DEC. 18.—New South Wales Branch, B.M.A.: Ethics Committee.
DEC. 20.—South Australian Branch, B.M.A.: Council Meeting.
DEC. 20.—Victorian Branch, B.M.A.: Executive Meeting.
DEC. 21.—Queensland Branch, B.M.A.: Council Meeting.
DEC. 26.—Victorian Branch, B.M.A.: Council Meeting.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract practice appointments in Western Australia. All Public Health Department appointments.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

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